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Water Quality Bureau
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Helena
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INTRODUCTION

That the quality of Montana's waters constitutes a problem demanding attention has become common knowledge in recent years. Awareness of the problem, however, has not led to concern with the control of the literature addressed to the problem. Much has been written about the quality of Montana waters yet the literature remains hard to locate. The intent of this bibliography is to contribute to identification of the literature relevant to water quality in Montana. Hopefully the effort will contribute to administrative and citizen awareness of the extent of the problem in Montana and further research on the subject.

To be included in this bibliography an item must address one of the three major parameters--chemical, physical or biological--of water quality. The item may concern itself either with modified or polluted waters or seek to define the nature of natural or unmodified waters. In addition, administrative studies and plans, regulations and laws which seek to amend or maintain the quality of Montana's waters are included. Within these limits every attempt has been made to make the bibliography both intensive and extensive. Since that goal has not been entirely achieved the authors would appreciate being notified of obvious oversights.

No bibliography of this type could be assembled without the aid of individuals and groups. To all who have been of assistance in producing this bibliography we express our thanks. Particularly, however, we wish to thank the reference staff of the Montana State Library. Their assistance in providing advice, equipment and work space and in obtaining much needed publications has been invaluable. In addition, we wish to thank Elizabeth Miller who began the tedious task of identifying and locating many of the items in the bibliography. Lastly, we express our thanks to Kitty Herrin for assistance in organizing and preparing the manuscript.

G.W. Burnett
Research Consultant
Helena, Montana

M.K. Botz, P.E.
Head, Surveillance and Planning
Montana Water Quality Bureau
Environmental Sciences Division
Montana Department of Health and
Environmental Sciences

Helena
Summer, 1974

ORGANIZATION AND USE

The bibliography consists of three chapters. Chapter 1 contains citations to academically produced studies. Chapter 2 cites journal articles, books and book sections. Chapter 3 lists government publications.

The number appearing before each entry indicates first the chapter number, secondly the number of the entry within the chapter and thirdly a symbol indicating the library which has the item. Since the Water Quality Bureau does not maintain a library, copies of the publications cited in this bibliography should be obtained from the libraries indicated or through the interlibrary loan facilities of the Montana State Library. A table interpreting these symbols may be found on page iii of this study.

Following the text of this bibliography are three indexes. The first lists the studies by the standard river basin number in which they were conducted. A map translating the river basin numbers into geographic reality appears as page 57 of this study. The second index is to proper geographic names. The third index is to topics and subjects. The number or numbers following each index entry indicate the chapter and entry number where pertinent information may be found.

LOCATION SYMBOLS

CSU -- Colorado State University Library
Fort Collins, Colorado 80521

FG -- Montana Department of Fish and Game
Helena, Montana 59601

MHS -- Montana Historical Society Library
Helena, Montana 59601

MSL -- Montana State Library
930 E. Lyndale Ave.
Helena, Montana 59601

MSU -- Montana State University Library
Bozeman, Montana 59715

MT -- Montana College of Mineral Science and Technology Library
Butte, Montana 59701

UM -- University of Montana Library
Missoula, Montana 59801

UNM -- University of New Mexico Library
Alburquerque, New Mexico 87106

UU -- University of Utah Library
Salt Lake City, Utah 84112

WQB -- Water Quality Bureau
Environmental Sciences Division
Department of Health and Environmental Sciences
Helena, Montana 59601

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Chapter 1

ACADEMIC STUDIES

Entry Number

1/1-MSU Aasheim, Ronald J. 1973. "Assessing Potential Impacts of Logging and Road Construction on the Soil and Water Resources in a Semi-Primitive Area." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Porcupine Creek(41-H); Lumbering; Sedimentation; Road Construction

1/2-MSU Arneson, Ronald D. 1969. "Primary Productivity in Quake Lake, Montana." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Quake Lake (Earthquake Lake)(41-F); Earthquake Lake (Quake Lake)(41-F); Madison River (upper)(41-F); Primary Productivity; Water Temperature; Electrical Resistivity Light Penetration; Phytoplankton; Zooplankton

Note: Primary productivity is correlated with physical and chemical parameters. Within this system phosphate appears to be the limiting factor of productivity.

1/3-MSU Avery, Eddie L. 1969. "Effects of Domestic Sewage on Aquatic Insects and Salmonids of the East Gallatin River, Montana." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: East Gallatin River(41-H); Sewage; Municipal Wastes; Salmonids; Trout; Aquatic Insects

Note: Insect populations decreased at and below the sewage outfall but at 12.65 miles below the outfall populations increased dramatically. Salmonids populations declined below the outfall.

1/4-MSU Bahls, Loren L. 1971. "Ecology of the Diatom Community of the Upper East Gallatin River, Montana with In Situ Experiments on the Effect of Current Velocity on Features of the Aufwuchs." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: East Gallatin River(41-H); Periphyton; Diatoms; Municipal Wastes

Note: Diatom and Aufwuchs community composition is described in relationship to the former Bozeman Sewage Treatment Plant.

Entry Number

1/5-UM Barry, William T. 1955. "Factors Which Affect the Periodicity and Abundance of Algae in the Upper Clark Fork of the Columbia River Drainage." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Clark Fork (of the Columbia)(76-G); Algae; Municipal Wastes; Industrial Wastes

1/6-UM Benson, Barbara A. 1967. "A Study of the Survival of Escherichia Coli and Streptococcus Faecalis in Water." Unpublished Master's thesis, University of Montana (Missoula).

Terms: E. Coli; Streptococcus Faecalis; Bacteria

Note: A laboratory thesis which seeks to establish the population dynamics of the two species under variable environmental conditions.

1/7-MSU Bianchi, Donald R. 1963. "The Effects of Sedimentation on Egg Survival of Rainbow Trout and Cutthroat Trout." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Fish Eggs; Trout; Sedimentation; Bluewater Creek(43-D)

1/8-MSU Bierley, James A. 1966. "Contribution of Chemoautotropic Bacteria to the Acid Thermal Waters of the Geyser Spring Group in Yellowstone National Park." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Aquatic Bacteria; Thermal Springs; Yellowstone National Park

1/9-MSU Bissonnette, Gary K. 1971. "A Microbiological and Chemical Investigation of the Effects of Multiple Use on Water Quality of High Mountain Watersheds." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Coliforms; Enterococcal; E. Coli; Bears; Elk; Lumbering; Aquatic Bacteria

Note: Microbiological populations of two watersheds, one having been consistently open to the public and the other opened to the public only recently, are compared. Differences are attributed to variations in the land use and animal populations of the two watersheds.

Entry Number

1/10-MSU Bjerke, Ardine L. 1973. "Systems Analysis of the Environmental Impact of Recreation: The Dynamics of the Fishing Ecosystem." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Gallatin Canyon; Big Sky Co.; Recreation; Systems Analysis

1/11-UM Bjork, Claron D. 1967. "The Zooplankton of Flathead Lake, Montana." Unpublished Master's thesis, University of Utah.

Terms: Flathead Lake(76-LJ); Zooplankton

Note: Zooplankton populations are described and correlated with various physical and chemical aspects of the lake.

1/12-MSU Burns, David C. 1973. "Plecoptera of the West Fork of the West Gallatin River and Factors Influencing Their Distribution." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Plecoptera; Gallatin River (West Fork of the West Fork) (41-H)

Note: Important factors are geology, terrestial vegetation, stream width and temperature.

1/13-UM Cladouhos, Joseph W. 1968. "The Water Quality and Cultural Eutrophication of Seeley Lake, Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Seeley Lake; Eutrophication

Note: Data on the chemical, physical and biological properties of Seeley Lake are presented. The lake is found to be moderately eutrophic and nutrient accumulation is attributed to associated land use and water control structures in the lake.

1/14-WQB Clark, John H. 1970. "Analysis of Polluted and Unpolluted Sections of Prickly Pear Creek." Unpublished paper, Carroll College.

Terms: Prickly Pear Creek(41-I); Industrial Wastes

Note: Major parameters of water quality are compared for stations above and below East Helena

1/15-MSU Clothier, William D. 1952. "Fish Loss and Movement in Irrigation Diversions from the West Gallatin River, Montana." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Gallatin River(41-H); Fish Migration; Irrigation Systems; Fish Populations

Entry
Number

1/16-UM Decker, Gary L. 1968. "Preliminary Report on the Geology, Geochemistry and Sedimentology of Flathead Lake, Northwestern Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Flathead Lake(76-LJ); Sediments; Geochemistry

1/17-MSU Ehlke, Theodore A. 1968. "Microbiological Findings of Pollution Studies on the East Gallatin River and Its Tributaries." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: East Gallatin River(41-H); Aquatic Microbiology; Municipal Wastes

Note: Microbiological populations are correlated with pollution sources.

1/18-MSU Elser, Allen A. 1967. "Fish Populations of a Trout Stream in Relation to Major Habitat Zones and Channel Alterations." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Little Prickly Pear Creek(41-QJ); Channeling; Aquatic Habitats

1/19-MSL Falter, C. Michael. 1966. "Comparative Limnology of Lakes on the Beartooth Plateau, South-Central Montana." Unpublished Master's thesis, University of Pittsburgh.

Terms: Beartooth Plateau(43-D); Limnology; Benthos; Lakes; Alpine; Phytoplankton

1/20-MSU Foster, Richard L. 1967. "The Effect of Unit Weight and Slope on the Erosion of Unprotected Slopes." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Runoff; Erosion; Sedimentation

Note: Laboratory tests to determine the relationships between slope and unit weight in the erosion process. For a given weight, there is a unique slope producing maximum erosion.

1/21-UM Fox, Richard D. 1965. "Hydrogeology of the Cascade-Ulm Area, Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Smith River(41-J); Missouri River (41-QJ); Hydrogeology; Aquifers

Note: The water quality of the Cascade-Ulm area is described and discussed in the context of the hydrogeology of the area.

Entry
Number

1/22-MSU Garrett, Paul A. 1973. "The Distribution and Abundance of Aquatic Insects in the Middle West Gallatin Drainage." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Gallatin River (West Fork of the West Fork)(41-H); Aquatic Insects

Note: The major factors affecting species distributions are surveyed.

1/23-MSU Glorvigen, Thomas H. 1972. "The Responses of Insect Communities in the East Gallatin River, Montana, to Sewage Effluents." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: East Gallatin River(41-H); Bozeman; Aquatic Insects; Municipal Wastes; Sewage

Note: Aquatic insect populations are surveyed prior to and after the closing of a sewage outfall in Bozeman.

1/24-UM Goers, John W. 1968. "Geology and Ground-water Resources Stockett-Smith River Area, Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Groundwater Quality; Smith River Drainage Basin(41-J)

1/25-MSU Griffin, Daniel P. 1971. "A Study of the East Gallatin River, Using an Algal Bioassay (Batch Method) and Some Problems Encountered." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: East Gallatin River(41-H); Bozeman; Sewage Treatment; Nutrients; Municipal Wastes; Bioassay

1/26-MSU Gumtow, Ronald B. 1954. "An Investigation of the Periphyton in a Riffle of the West Gallatin River, Montana." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Gallatin River(41-H); Periphyton

Note: Periphyton community composition is described in relationship to physical characteristics of the river through several seasons.

1/27-MSU Gunderson, Donald R. 1966. "Stream Morphology and Fish Populations in Relation to Floodplain Use." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Rock Creek(76-E); Grazing; Fish Populations

Note: The impact of grazing on stream channel development is associated with the dynamics of fish population.

Entry Number

1/28-MSU Hagfeldt, Glenn. 1971. "Stream Quality Measurement Along a Livestock Wintering Operation." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Meagher County; Smith River Drainage Basin(41-J); Livestock

Note: Attempts to determine the effect of animal waste build-ups on stream water quality.

1/29-MSL Hartman, Laird M. 1971. "Eutrophication Potential of Bull Lake and Heavy Metal Concentrations in the Lake and Surrounding Streams, Bull Lake, Montana." Unpublished paper, University of Montana (Missoula).

Terms: Bull Lake(76-D); Eutrophication; Pulp Wastes; Heavy Metals; Mine Wastes

1/30-MSU Heaton, John R. 1969. "The Benthos and Drift Fauna of a Riffle in the Madison River, Yellowstone National Park." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Madison River(41-F); Yellowstone National Park; Benthos; Aquatic Insects

Note: Benthos and drift populations are described.

1/31-UU Hern, Stephen C. 1971. "Bacterial Indicators of Water Quality of Flathead Lake and Flathead River, Montana." Unpublished Master's thesis, University of Utah.

Terms: Flathead Lake(76-LJ); Aquatic Bacteria

1/32-MT Hilpert, Fredrick M. 1951. "An Investigation of the Groundwater of the Area North of Flathead Lake, Montana." Unpublished (Senior) paper, Montana College of Mineral Science and Technology (Butte).

Terms: Groundwater Quality; Flathead Lake(76-LJ)

1/33-MSU Horpestad, Abraham A. 1969. "Factors Affecting the Distribution and Abundance of Aquatic Macrophytes in Parts of the Madison, Firehole and Gibbon Rivers." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Madison River (upper)(41-F); Yellowstone National Park; Firehole River (Wyoming); Gibbon River (Wyoming); Vegetation

Note: Aquatic plant community composition and diversity is correlated with physical and chemical parameters of the river.

Entry
Number

1/34-MSU Hsieh, Huch Ping. 1972. "A Source Study of the Suspended Solids in the Gallatin River." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Gallatin River(41-H); Sedimentation

1/35-MSL Ivory, Thomas M. 1973(?). "Phytoplankton Production of Polson Bay, Flathead Lake, Montana." Unpublished Ph.D. thesis, University of Utah.

Terms: Flathead Lake(76-LJ); Phytoplankton; Productivity

1/36-MSU Jacobs, Veda. 1950. "The Algal Flora of the East Gallatin River as a Contribution to the Algae of Montana." Unpublished Master's thesis, Montana State College (Bozeman)

Terms: East Gallatin River(41-H); Bozeman; Algae; Sewage; Municipal Wastes

Note: The community composition of algae is determined and correlated with the sewage outfall from the city.

1/37-WQB Jones, Larry, et.al. 1971. "Follow-up Study of Clark Fork River." Unpublished paper, University of Montana (Missoula).

Terms: Clark Fork River(76-M); Missoula; Water Quality Standards

Note: It is concluded that by State standards the river is not polluted as it flows through Missoula.

1/38-MSU Kaiser, Gerald L. 1971. "Population Dynamics of Rotifers and Some Factors Affecting Their Populations in Canyon Ferry Reservoir, Montana." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Canyon Ferry Reservoir(41-I); Rotifers; Zooplankton; Phytoplankton

Note: Population dynamics of the Rotiferan community are a function of temperature, competition, antibiosis and predation.

1/39-MSU Kathrein, Henry R. 1948. "A Study of Cultivation Methods of Sulphur Bacteria Found in Thermal Waters of Yellowstone National Park." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Aquatic Bacteria; Thermal Spring; Yellowstone National Park

Entry Number

1/40-WQB Kay, Charles. 1972. "A Schematic Model of Fluoride Cycling in a Contaminated Aquatic Ecosystem." Unpublished paper, University of Montana (Missoula).

Terms: Douglas Creek(76-GJ); Fluorides; Ecosystems

Note: From previously gathered data a model for fluoride cycling is suggested.

1/41-MSU Keppner, Alfred P. 1972. "Adaptability of Selected Montana Soils for Septic Tank Sewage Disposal." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Gallatin Canyon; Septic Tanks; Soil Contamination

1/42-UM Knapp, Harold G. 1957. "Aspects of Insect Populations of the Bitterroot River, Montana." Unpubished Master's thesis, University of Montana (Missoula).

Terms: Bitterroot River(76-H); Aquatic Insects

Note: The population dynamics of three species of aquatic insects are related to physical properties of the river.

1/43-MSU Kraft, Melvin E. 1968. "The Effects of Controlled Dewatering on a Trout Stream." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Blacktail Creek(41-B); Trout; Irrigation Systems

1/44-MSL Kullberg, Russell G. 1966. "The Distribution of Algae in Six Thermal Spring Effluents of Western Montana." Unpublished Ph.D. thesis, Michigan State University.

Terms: Algae; Thermal Springs

Note: Algal community distributions are studied in relationship to thermal spring effluents particularly with reference to stream characteristics, algae identification, and morphological anomalies. Emphasis is upon developing research methods.

1/45-WQB Landess, R., et.al. 1971. "A Study of Phosphorus Concentrations in the Clark Fork River in the Vicinity of Missoula Sewage Treatment Plant and Daly's Slaughter House." Unpublished manuscript paper, University of Montana (Missoula).

Terms: Clark Fork of the Columbia River(76-G); Missoula (city of); Sewage; Municipal Wastes; Phosphorus (cont. p. 9)

Entry Number

1/45-WQB (cont.)

Note: Measurements indicate declines in the phosphorus concentration. This is in part the result of the season of testing, and in part the application of new sewage treatment techniques.

1/46-UM

Lehmkuhl, Dennis. 1966. "A Study of the Littoral Invertebrates of Three Mountain Lakes in Glacier National Park, Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Glacier National Park; Invertebrates

Note: Invertebrate species of three glacial lakes are described and related to the chemical and physical nature of the water.

1/47-MSU

Lewis, Stephen L. 1967. "Physical Factors Influencing Fish Populations in Pools of a Trout Stream." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Little Prickly Pear Creek(41-I); Fish; Fish Populations

Note: Fish populations are associated with physical parameters of the stream.

1/48-UM

Lisle, Thomas E. 1972. "Sediment Yield and Hydrodynamic Implications, West Fork of the Madison River, Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Madison River (West Fork)(41-F); Sediment Production; Channel Morphology; Grazing; Range Management; Sheep Grazing; Channel Stability

Note: Sedimentation in the West Fork of the Madison River is related to a history of sheep grazing practices.

1/49-MT

MacIntyre, Donald D. 1970. "A Basic Survey of the Water Pollution Problems in the Northwestern United States as Caused by the Mining Industry." Unpublished (Senior) paper, Montana College of Mineral Science and Technology (Butte).

Terms: Water Pollution; Mine Wastes

Note: This is a general survey of the problems currently understood and addressed in the area.

1/50-MSU

Martin, Danny B. 1967. "Limnological Studies on Hebgen Lake, Montana." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Hebgen Lake(41-F); Madison River (upper)(41-F); Limnology; Phytoplankton; Primary Productivity (cont. p. 10)

Entry Number

1/50-MSU (cont.) Note: Productivity of the Phytoplankton community is related to various physical and chemical aspects of the environment.

1/51-MSU McArthur, George M. 1970. "Acid Mine Waste Pollution Abatement Sand Coulee Creek, Montana." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Meagher County; Sand Coulee Creek(41-J); No Name Creek(41-J); Smith River Drainage Basin(41-J); Acid Mine Drainage; Water Pollution Control; Pollution Abatement

Note: Acid water pollution from abandoned mines is surveyed. Methods of treatment and prospective costs are analyzed.

1/52-UNM Megard, Roberto. 1958. "Studies of the Microcrustacea of Three Montana Lakes in Glacier National Park, Montana." Unpublished Master's thesis, University of New Mexico.

Terms: Aquatic Animals; Microcrustacea; Glacier National Park

Note: Microcrustacean populations are related to geographical locational properties of the lakes.

1/53-MSL Miner, Michael L. 1971. "Ecological Studies of Stoneflies (Plecoptera) of the North Fork of Elk Creek, North Fork Experimental Watershed, Lubrecht Experimental Forest, Missoula County, Montana." Unpublished Ph.D. thesis, University of Utah.

Terms: Elk Creek(76-F); Stoneflies

1/54-MSL Moghadam, Fatemeh. 1969. "Ecological and Systematic Study of Plankton Diatom Communities in Flathead Lake, Montana." Unpublished Ph.D. thesis, University of Utah.

Terms: Flathead Lake(76-LJ); Diatoms

Note: Composition and diversity of the diatom community is related to the physical and chemical quality of the waters.

1/55-MSL Morgan, Garth R. 1971. "Phytoplankton Productivity Vs. Dissolved Nutrient Level of Flathead Lake, Montana." Unpublished Ph.D. thesis, University of Utah.

Terms: Flathead Lake(76-LJ); Phytoplankton; Nutrients; Productivity

Note: Relates physical and chemical water quality with Phytoplankton population dynamics. Minimum nutrient requirements for dominate species are established.

Entry Number

1/56-UU Morgan, Garth R. 1968. "Phytoplankton Productivity of the East-Shore Area of Flathead Lake, Montana." Unpublished Master's thesis, University of Utah.

Terms: Flathead Lake(76-LJ); Phytoplankton; Productivity

1/57-MT Neibauer, Herman. 1941. "Ground-Water in the Lake Basin Field and Adjacent Area." Unpublished (Senior) paper, Montana School of Mines (Butte).

Terms: Lake Basin Field; Groundwater Quality

1/58-UM Newell, Robert L. 1970. "Productivity of Morrell Creek, a Mountain Stream with an Intermittant Flow Section, Clark Fork Drainage, Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Morrell Creek(76-F); Benthos; Periphyton

1/59-MSU Newman, Dennis R. 1972. "Analysis of Fish Tissue Trace Amounts of Lead by Furnace Atomic Absorption Spectroscopy." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Gallatin River(41-H); Lead; Fish

1/60-WQB Pacini, Paul R. 1972. "The Impact of Street Salting on the Clark Fork River." Unpublished paper, University of Montana (Missoula).

Terms: Clark Fork River(76-M); Missoula; Salts; Municipal Wastes; Streets

Note: The study demonstrates a substantial increase in the sodium content of the river as it passes through Missoula but is unable to attribute the cause to salting and snow removal practices in Missoula.

1/61-UM Parker, James L. 1968. "A Study of the Algal Flora, Phytoplankton, and Chemistry of Rainbow Lake, Sanders County, Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Rainbow Lake(76-L); Algae; Phytoplankton

1/62-UM Paullin, David G. 1973. "The Ecology of Submerged Aquatic Macrophytes of Red Rock Lakes National Wildlife Refuge, Montana." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Red Rock Lakes(41-A); Aquatic Plants; Water Chemistry

Note: Aquatic macrophytes are related to the chemical composition of the water

Entry
Number

1/63-MSL Peters, John C. 1971. "Effects of Sediment Control on Fish Populations." Unpublished Ph.D. thesis, Colorado State University.

Terms: Bluewater Creek(43-D); Fish; Erosion Control; Sediment Control

1/64-MSU Pierce, Bert E. 1963. "Distribution of Fish in a Small Mountain Stream in Relation to Temperature." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Warm Spring Creek(41-C); Thermal Springs; Fish

1/65-UM Potter, David S. 1974. "The Zooplankton of Flathead Lake: An Historical Review with Suggestions for Continuing Lake Resource Management." Unpublished Ph.D. thesis, University of Montana (Missoula).

Terms: Flathead Lake(76-LJ); Zooplankton

1/66-MSU Rasmussen, Sheila M. 1968. "Composition and Structure of Macrophyte Vegetation of the Firehole River, Yellowstone National Park as Related to Physical and Chemical Factors." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Firehole River (Wyoming); Yellowstone National Park; Iron Creek (Wyoming); Nez Perce Creek (Wyoming); Vegetation

Note: Current and bottom type are responsible for vegetation occurences but not community diversity. Temperature and alkalinity were variables explaining community diversity.

1/67-UM Raymond, Richard G. 1953. "Certain Aquatic Bacteria Associated with Western Montana Waters." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Aquatic Bacteria; Fish

Note: Aquatic bacteria in several locations are identified. Bacteria in the waters are the same as those associated with the fish in the streams.

1/68-UM Rice, Peter, et.al. 1973. "Bass Creek Water Quality Study." Unpublished paper, University of Montana (Missoula).

Terms: Bass Creek(76-H); Domestic Wastes

Note: Groundwater contamination and subsequent stream damage is studied in relationship to an area of rural residential development.

Entry
Number

1/69-MSU Roeder, Theodore S. 1966. "Ecology of the Diatom Communities of the Upper Madison River System, Yellowstone National Park." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Madison River (upper)(41-F); Yellowstone National Park; Gibbon River (Wyoming); Firehole River (Wyoming); Gardner River (Wyoming); Diatoms; Benthos

Note: Diatom community composition is correlated with changing physical parameters and competition.

1/70-MSU Schoenthal, Norman D. 1963. "Some Effects of DDT on Cold Water Fish and Fish-Food Organisms." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Trail Creek(43-B); DDT; Fish

Note: This study involves both a field and laboratory experiment.

1/71-WQB Shinn, Lake D. 1970. "A Qualitative Study of the Riffle Community Insects in the Upper Clark Fork River." Unpublished paper, University of Montana (Missoula).

Terms: Clark Fork River (upper)(76-G); Aquatic Insects; Industrial Wastes

Note: Composition and diversity of the aquatic insect community are correlated with sources of industrial pollution.

1/72-MSL Smith, James V. 1962. "A Study of Mosquito Problems Associated with Irrigation in the Milk River Valley, Montana." Unpublished Ph.D. thesis, University of Utah.

Terms: Milk River Drainage Basin(40-FJ); Mosquitoes; Irrigation Practices; Public Health

Note: The study surveys the extent of the mosquito problem and its relationship to irrigation practices. Techniques of prevention and control are discussed.

1/73-MSU Smith, Kenneth M. 1973. "Some Effects of Clark Canyon Reservoir on the Limnology of the Beaverhead River in Montana." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Clark Canyon Reservoir(41-A); Beaverhead River(41-B); Limnology; Reservoirs

Note: Seeks to establish the effects of reservoir on major physical and chemical parameters of a river.

Entry
Number

1/74-MSU Soltero, Raymond A. 1971. "Limnological Studies on Bighorn Lake (Yellowtail Dam) and Its Tributaries." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Bighorn Lake(43-P); Yellowtail Reservoir(43-P); Phytoplankton

Note: Phytoplankton productivity is related to the chemical and physical characteristics of the lake.

1/75-MSU Soltero, Raymond A. 1968. "Chemical and Physical Findings from Pollution Studies on the East Gallatin River and Its Tributaries." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: East Gallatin River*(41-H); Bozeman; Pollutants; Municipal Wastes

1/76-UM Sonstelie, Lawrence C. 1967. "A Study of the Water Quality of the Flathead River." Unpublished Master's thesis, University of Montana (Missoula).

Terms: Flathead River(76-LJ); Water Quality; Industrial Wastes; Coliforms

Note: A formal year long water quality survey of the river is discussed in light of potential industrial expansion. Biological pollution is the main problem of the river.

1/77-MSU Spindler, John C. 1954. "Game Fish Loss in Certain Irrigation Diversions of the West Gallatin River, Montana in Relation to the Physical Characteristics of Canal Intakes." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Gallatin River(41-H); Fish; Irrigation Effects

Note: Game fish losses are correlated with physical characteristics of the irrigation system.

1/78-MSU Stadnyk, Lelyn. 1971. "Factors Affecting the Distribution of Stoneflies in the Yellowstone River, Montana." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Yellowstone River Drainage Basin(42-); Stoneflies

Note: Plecoptera population dynamics are viewed in terms of water physical, chemical and biological characteristics. Eutrophic conditions and change, in the aufwuchs community are major factors influencing stonefly distribution.

Entry Number

1/79-MSL Stanford, Jack. 1973(?). "Invertebrate Survey of the Flathead River Above Flathead Lake, Montana." Unpublished Ph.D. thesis, University of Utah.

Terms: Flathead River(76-LJ); Aquatic Insects

1/80-MSU Stober, Quentin J. 1962. "Some Limnological Effects of Tiber Reservoir on the Marias River." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Tiber Reservoir(41-N&P); Marias River(41-P); Limnology; Reservoirs

1/81-MSU Todd, Elston H. 1967. "Primary Productivity of the Madison River in Yellowstone National Park, Wyoming." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Madison River (upper)(41-F); Yellowstone National Park; Primary Productivity; Productivity

Note: Decreasing downstream productivity is correlated with major parameters of the river. Decreases in CO_2 concentration are of primary importance in accounting for the decreasing productivity.

1/82-WQB Traynor, Jim. 1970. "An Ecological Comparison of Polluted and Unpolluted Sections of Prickly Pear Creek." Unpublished paper, Carroll College.

Terms: Prickly Pear Creek(41-I); Industrial Wastes; Municipal Wastes

Note: The waters above and below East Helena are statistically compared for major parameters. Pollution is traced to industrial and municipal sources.

1/83-WQB Traynor, Jim. 1969. "The Effect of Acid Drainage Pollutant Upon Fish Habitat in Prickly Pear Drainage." Unpublished paper, Carroll College(?).

Terms: Prickly Pear Creek(41-I); Acid Mine Water; Mine Wastes; Trout

Note: The paper attempts to establish that pollutants from an abandoned mine do enter the creek and do effect the population composition and growth rate of individuals.

Entry Number

1/84-MSU Tuinstra, Kenneth E. 1967. "Vegetation of the Floodplains and First Terraces of Rock Creek Near Red Lodge, Montana." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Rock Creek(43-D); Trout; Vegetation

1/85-MSL Van Meter, Wayne P. 1971. "Mercury Concentrations in Fish of the Upper Clark Fork River." Unpublished paper (OWRR Project No. A-284-Mont.), University of Montana (Missoula).

Terms: Fish; Mercury; Clark Fork River

1/86-MSU Walter, William G. and Robert P. Bottman. 1967(?). "The Microbiology of an Open and a Closed Watershed in the Gallatin National Forest of Montana." Unpublished paper, Montana State University (Bozeman).

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Aquatic Bacteria

1/87-MSU Wilson, Gareth A. 1972. "A Classification According to the Mammalian Sources of Coliform Organisms Isolated from a Remote Mountain Stream." Unpublished Ph.D. thesis, Montana State University (Bozeman).

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Aquatic Bacteria

Note: The study seeks to develop methods for studying fecal pollution.

1/88-MT Young, Francis M. 1965. "A Study of Heavy Minerals of the Streams of the West Fork of the Bitterroot River, Montana." Unpublished Master's thesis, Montana College of Mineral Science and Technology (Butte).

Terms: Bitterroot River (West Fork)(76-H); Sedimentology; Sediment Production

1/89-MSU Zillges, Gordon F. 1971. "The Aquatic Insects of Bluewater Creek, Montana, Above and Below an Area of Intensive Agriculture." Unpublished Master's thesis, Montana State University (Bozeman).

Terms: Bluewater Creek(43-D); Agriculture; Aquatic Insects

Note: Aquatic insect communities are related to changes in the physical characteristics of the river which are caused by intensive agricultural development.

Chapter 2

ARTICLES

Entry Number

2/1-UM Anon. 1971. "Notes: Water--A Problem in Montana." Montana Law Review. 32:81-109.

2/2-UM Anon. 1970. "Hoerner Waldorf Attacks Both Air and Water Pollution at Missoula." Pulp and Paper. 44:119-20.

2/3-WQB Anaconda Company. 1972. Anaconda Clark Fork Data Report of June 14, 1972.

Terms: Water Chemistry; Clark Fork River

Note: A File copy report containing sample data for the period ending June 14, 1972.

2/4-MSL Anaconda Company. 1968(?). Water-Supply and Pollution Control, Butte-Anaconda Area. Butte: The Anaconda Co.

Terms: Industrial Water; Industrial Wastes; Water Quality Control; Anaconda Co.

2/5-MSL Anderson, Bob. 1973. "Water and Eastern Montana Coal Development." In Second Annual Report of the Montana Environmental Quality Council. Pp. 12-22.

Terms: Coal Mines

2/6-UM Armitage, Kenneth B. 1958. "Ecology of Riffle Insects of the Firehole River, Wyoming." Ecology. 39:571-580.

Terms: Firehole River (Wyoming); Aquatic Insects

2/7-MSL Arneson, Ronald D. and John C. Wright. 1967. "Primary Productivity Research on Quake Lake, Montana (Abstract)." Montana Academy of Sciences, Proceedings. 27:34.

Terms: Hebgen Lake(41-F); Earthquake Lake (Quake Lake)(41-F); Quake Lake (Earthquake Lake)(41-F); Primary Productivity

Note: Primary productivity is limited by nitrate concentration. Sources of nitrate are in Hebgen Lake and consequently productivity varies with the release of water from Hebgen Lake.

Entry Number

2/8-UM Avery, E.L. 1970. "Effects of Domestic Sewage on Aquatic Insects and Salmonids of the East Gallatin River, Montana." Water Research. 4:165-177.

Terms: East Gallatin River(41-H); Aquatic Insects; Fish; Municipal Wastes

2/9-UM Bahls, Loren L. 1973. "Diatom Community Response to Primary Wastewater Effluent." Water Pollution Control Federation, Journal. 45:134-44.

Terms: East Gallatin River(41-H); Diatom; Municipal Wastes; Nutrients

Note: Diatom taxa are correlated with nitrate-N, ammonia-N and phosphate. Overall, diversity correlated negatively with ammonia and positively with phosphate.

2/10-MSL Bahls, Loren L. and Marvin R. Miller. 1973. "Saline Seep in Montana." In Second Annual Report of the Montana Environmental Quality Council. Pp. 35-44.

Terms: Saline Water Intrusion

2/11-MSL Bahls, Loren L., et.al. 1969. "The Toxicity of Organic Wastes on Eggs and Fry of Rainbow Trout." Montana Academy of Sciences, Proceedings. 29:52-62.

Terms: East Gallatin River(41-H); Fish Eggs; Fry; Municipal Wastes; Ammonia

2/12-MSL Barry, William T. 1956. "Factors Which Affect the Periodicity and Abundance of Algae in the Upper Clark Fork of the Columbia River Drainage (Abstract)." Montana Academy of Sciences, Proceedings. 16:53.

Terms: Clark Fork River(76-G); Anaconda; Industrial Wastes; Algae

2/13-MSL Bissonnette, Gary K., et.al. 1971. "Interrelationships Between Chemical and Bacterial Characteristics of Water From Two High Mountain Watersheds (Abstract)." Montana Academy of Sciences, Proceedings. 31:104.

Terms: Aquatic Bacteria

Note: An open and closed mountain watershed are bacteriologically compared. "It is concluded that the chemical make-up of the two watersheds does not adequately account for differing bacterial diversities."

Entry
Number

2/14-MSL Bissonnette, Gary K., et.al. 1970. "Preliminary Studies of Serological Types of Enterobacteria Occuring in a Closed Mountain Watershed." Montana Academy of Sciences, Proceedings. 30:66-76.

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Coliforms; Enterococcal; E. Coli; Bears; Elk; Lumbering; Aquatic Bacteria

Note: Presents the methodology and much analysis that appeared in this author's Master's thesis. The method demonstrates the feasibility of using serological types in order to indicate the cause and source of bacteriological pollution in water.

2/15-MHS Botz, M.K. 1967. "Hydrogeology of the East Bench Irrigation Unit, Madison and Beaverhead Counties, Montana." Montana Geological Society Guidebook to the 18th Annual Field Conference. Pp. 79-88.

Terms: Beaverhead River(41-B); Irrigation Water

2/16-MSL Brinck, C.W. 1972. "Water and Pollution in Montana." In Environmental Pollution in Montana. Robert Bigart, ed. Missoula: Mountain Press Publishing Co., pp. 127-132.

Terms: Water Quality; Sewage Treatment; Municipal Wastes

Note: This is a popular review of the development of municipal water quality problems.

2/17-MSL Brinck, C.W. 1970. "Animal Waste Disposal." In Proceedings of the Annual Agricultural Seminar Sponsored by the Montana Cooperative Extension Service, pp. 35-40.

Terms: Feeders

2/18-MSL Brown, C.J.D., et.al. 1953. "Observations on Ice Conditions and Bottom Organisms in the West Gallatin River, Montana." Montana Academy of Sciences, Proceedings. 13:21-27.

Terms: Gallatin River(41-H); Benthos; Ice

Note: The freezing process is related to the physical properties of the river and the survival of the benthic community.

2/19-MSL Brunson, Royal B. and Howard E. Nelson. 1952. "A Limnological Reconnaissance of Three Western Montana Lakes." Montana Academy of Sciences, Proceedings. 12:45-61.

Terms: Howard Lake(76-D); Rogers Lake(76-L); Red Meadow Lake (76-LJ); Limnology

Entry Number

2/20-UM Clare, Herbert C. 1959. "Water Quality Problems in the Columbia River Basin." American Society of Civil Engineers. 85:1-34.

Terms: Columbia River Basin; Water Quality Control

Note: "The paper discusses problems of maintenance of high water quality throughout the Columbia River Basin. As the economy matures, the preventive pollution control program of the area becomes increasingly important..." (Abstract, p. 1).

2/21-MSL Clark, Mark. 1972. "Does Montana Have Water Quality Control?" In Environmental Pollution in Montana. Robert Bigart, ed. Missoula: Mountain Press Publishing Co., pp. 133-141.

Terms: Water Law; Rusoff Proposal; Water Pollution Control Act (1971)

2/22-MSL Clark, Mark and Bruce Harper. 1971. "Does Montana Have Water Quality Control?" Montana Business Quarterly. 9(3):45-50.

Terms: Water Law; Rusoff Proposal; Water Pollution Control Act (1971)

2/23-MSL Clothier, William D. 1954. "Effect of Water Reductions on Fish Movement in Irrigation Diversions." Journal of Wildlife Management. 18:150-160.

Terms: Gallatin River(41-H); Irrigation Effects; Fish Migration

2/24-UM Clothier, William D. 1953. "Fish Loss and Movement in Irrigation Diversions From the West Gallatin River, Montana." Journal of Wildlife Management. 17:144-153.

Terms: Gallatin River(41-H); Irrigation Effects; Fish Migration

2/25-UM Cope, Oliver B. 1961. "Effects of DDT Spraying for Spruce Budworm on Fish in the Yellowstone River System." American Fisheries Society, Transactions. 90:239-251.

Terms: Yellowstone River Basin (upper)(43-B); DDT; Fish

Note: The accumulation of DDT in fish resulting from a 1957 application is analyzed.

2/26-MSL Dunkle, Frank H., Jr. 1955. "A Survey of Water Uses of the West Gallatin River, Gallatin County, Montana." Montana Academy of Sciences, Proceedings. 15:31-39. (cont. p. 21)

Entry Number

2/26-MSL (cont.)

Terms: Gallatin River(41-H); Water Quality

Note: The pressure created by high demand and conflicting uses adversely affect the quantity and quality of the river's waters.

2/27-MSL

Ehlke, Theodore A. and Raymond A. Soltero. 1969. "Microbiological Pollution Studies on the East Gallatin River and Its Tributaries." Montana Academy of Sciences, Proceedings. 29:97-113.

Terms: East Gallatin River(41-H); Bozeman; Aquatic Bacteria; Municipal Wastes

Note: Numbers of bacteria of both fecal and non-fecal origin were determined and numbers correlated according to a number of time and locational factors.

2/28-MSL

Environmental Systems. 1973. Colstrip Generation and Transmission Project, Applicants Environmental Analysis.

Terms: Electric Power Production; Colstrip

2/29-UM

Ferguson, G.E. 1956. "Missouri River Water Quality and Quantity." Journal of the American Water Works Association. 48:951-962.

Terms: Missouri River Basin; Water Quality

Note: Discusses the general impact of development on the water quanity and quality, particularly chemical, of the entire basin.

2/30-UM

Goodrich, Thomas D., et.al. 1973. "Enteric Bacteria Found in Elk Droppings in a Municipal Watershed in Montana." Journal of Environmental Health. 35:374-377.

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Coliforms; Aquatic Bacteria; Elk; Horses

Note: Horse droppings were studied to identify bacteria harmful to man.

2/31-MSL

Goodrich, Thomas D., et.al. 1971. "The Incidence of Enteric Bacteria in the Feces of Wild and Domestic Animals (Abstract)." Montana Academy of Sciences, Proceedings. 31:103.

Terms: Aquatic Bacteria; Elk; Horses

Entry Number

2/32-MSL Goodrich, Thomas D., et.al. 1970. "A Bacteriological Study of the Waters of Bozeman Creek's South Fork Drainage." Montana Academy of Sciences, Proceedings. 30:59-65.

Terms: Bozeman Creek (Sourdough Creek)(41-H); Sourdough Creek (Bozeman Creek)(41-H); Middle Creek (Hyalite Creek); Hyalite Creek (Middle Creek); Bacteria; Coliforms; Elk

Note: A bacteriological study revealed that coliform counts rose drastically in a summer elk range. The authors conclude that Federal and State water standards may be attempting to keep water cleaner than it naturally occurs.

2/33-MSU Graham, V.E. and R.T. Young. 1934. "A Bacteriological Study of Flathead Lake, Montana." Ecology. 15:101-109.

Terms: Flathead Lake(76-LJ); Bacteria

2/34-MSL Groff, Gilber and Wayne A. Taylor. 1964. "Treatment Plant Located on Former Landfill Site." Public Works. June, pp. 105.

Terms: Missoula; Sewage Treatment Plant

2/35-UM Gumtow, Ronald B. 1955. "An Investigation of the Periphyton in a Riffle of the West Gallatin River, Montana." American Microscopical Society, Transactions. 74:278-292.

Terms: Gallatin River(41-H); Periphyton

Note: Periphyton population diversity is related to the physical properties of the river.

2/36-UM Hatcher, Melvin P. 1958. "Effects of Missouri River Basin Control on Water Quality." American Water Works Association, Journal. 50:1185-1187.

Terms: Missouri River Basin; River Basins; Water Quality

2/37-MSL Haverfield, Robert A. 1965. "The Extra Pay Dividends." The American City. Nov. 1965, pp. 101-103.

Terms: Missoula; Sewage Treatment Plants

2/38-MSL Heaton, Jack. 1960. "Fisheries Survey and Management Recommendations for the Boulder Drainage." Montana Academy of Sciences, Proceedings. 20:20-26.

Terms: Boulder River Drainage Basin(41-E); Fish Populations

(cont. p. 23)

Entry Number

2/38-MSL (cont.) Note: Fish populations productivity is discussed in relationship to physical characteristics of the river system.

2/39-MSU Highwood Alkali Control Association. 1971. Proceedings, Saline Seep-Fallow Workshop. Great Falls, February 22-23, 1971.

Terms: Salinity; Saline Water Intrusion

Note: Contains 22 papers on the causes and controls of the saline seep problem in Montana and its relationship to non-irrigated land.

2/40-UM Hopkins, Glen J. 1950. "Some Public Health Implications of the Missouri Valley Development Program." American Journal of Public Health. 40:917-922.

Terms: Missouri River Basin; Public Health

2/41-MSU Institute of Paper Chemistry. 1962. A Summary of the Biological Studies of the Clark Fork River in the Vicinity of Missoula, 1956-61. Appleton, Wisconsin.

Terms: Clark Fork (76-M); Aquatic Insects

Note: Presents species list and population counts with little attempt to analyze the data.

2/42-MSL Johnson, Eugene. 1972. "Muddy Creek: A Pollution Study." Montana Academy of Sciences, Proceedings. 32:58-65.

Terms: Muddy Creek(41-K); Sun River; Sedimentation

Note: The impact of the extreme sediment load of Muddy Creek on the Sun River is analyzed.

2/43-WQB Jutila, John W. 1970. "Water Quality and Waste Disposal in Montana." In Proceedings of the Annual Agricultural Seminar Sponsored by the Montana Cooperative Extension Service, pp. 61-68.

Terms: Feeders; Bozeman

2/44-MSL Konizeski, Richard L. 1967. "The Problem in Montana, the Physical Aspects." Montana Academy of Sciences, Proceedings. 27:8-14.

Terms: Water Quality

Note: The general nature of use and abuse of the waters of Montana are discussed.

Entry Number

2/45-UM Kullberg, Russell G. 1971. "Algal Distribution in Six Thermal Spring Effluents." American Microscopical Society, Transactions. 90:412-434.

Terms: Algae; Thermal Springs

Note: The algal community composition and diversity is studied along a continuum of decreasing temperature.

2/46-UM Kullberg, Russell G. 1968. "Algal Diversity in Several Thermal Spring Effluents." Ecology. 49:751-755.

Terms: Algae; Thermal Springs

2/47-MSL Lauff, George H. 1953. "A Contribution to the Water Chemistry and Phytoplankton Relationships of Rogers Lake, Flathead County, Montana." Montana Academy of Sciences, Proceedings. 13:5-19.

Terms: Rogers Lake(76-L); Phytoplankton; Eutrophication; Oligotrophy

2/48-UM Logan, Sidney M. 1963. "Winter Observations on Bottom Organisms and Trout in Bridger Creek, Montana." American Fisheries Society, Transactions. 92:140-145.

Terms: Bridger Creek(41-H); Benthos; Fish; Migration

2/49-UM Love, R.W., et.al. 1967. "Water Quality in the Missouri River--Progress and Prospects." Water Pollution Control Federation, Journal. 39:1986-2007.

Terms: Missouri River Basin; Water Quality

Note: In general terms the problems of water quality and water quality control are discussed.

2/50-UM Marts, M.E. 1954. "Upstream Storage Problems in Columbia River Power Development." Association of American Geographers, Annals. 44:43-50.

Terms: Reservoir Sites; Columbia River Drainage Basin

Note: Site location problems for reservoirs are related to conflicting goals and interests, among them aspects of water quality.

Entry
Number

2/51-MSL McArthur, George M. 1972. "Engineering and Chemical Consideration for Quality Control of Metallurgical Wastes." Paper presented at the Annual Meeting AIME (San Francisco, Feb. 20-24, 1972).

Terms: Mine Wastes; Industrial Wastes; Metallurgy; Anaconda Co.

2/52-MSL(?) McDonald, B.T. 1971. "Water Clarification and Reuse at a Copper Ore Concentrator." In Industrial Process Design for Water Pollution Control. Proceedings of Workshop. (Held in San Francisco, March 31-April 2, 1970 and Sponsored by the American Institute of Chemical Engineers, Water Committee.) Pp. 85-88.

Terms: Industrial Wastes; Water Treatment; Anaconda Co.; Mine Wastes

2/53-UM McFeters, Gordon A. and David G. Stuart. 1972. "Survival of Coliform Bacteria in Natural Waters: Field and Laboratory Studies with Membrane-Filter Chambers." Applied Microbiology. 24:805-811.

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Coliforms; Bacteria

2/54-MSL Milne, Charles M. 1970. "Review of Research and Recommendations on Animal Waste Management Control Measures for Montana with Special Reference to Beef Cattle Feedlots." Unpublished paper (Special Report AE-101), Montana State University (Bozeman).

Terms: Livestock

2/55-MSL Newell, Robert L. 1971. "Invertebrate Fauna of a Mountain Stream in Northwestern Montana." Montana Academy of Sciences, Proceedings. 31:65-68.

Terms: Morrell Creek(76-F); Aquatic Insects

2/56-UM Peters, John C. and William Alvord. 1964. "Man-Made Channel Alterations in Thirteen Montana Streams and Rivers." In Transactions of the 29th North American Wildlife and Natural Resources Conference. Washinton D.C.: Wildlife Management Institute. Pp. 93-102.

Terms: Fish; Channel Morphology

Note: The incidences of stream channel alterations and their impact on the sports fishery are reviewed.

Entry
Number

2/57-MSL Pierce, Bert E. 1966. "Distribution of Fish in a Small Mountain Stream in Relation to Temperature." Montana Academy of Sciences, Proceedings. 26:22-32.

Terms: Warm Springs Creek(41-C); Fish; Water Temperature; Thermal Springs; Trout

2/58-UM Potter, Louise F. and Gladys E. Baker. 1961. "The Microbiology of Flathead and Rogers Lakes, Montana: II. Vertical Distribution of the Microbial Populations and Chemical Analyses of Their Environments." Ecology. 42:338-348.

Terms: Flathead Lake(76-LJ); Rogers Lake(76-L); Microorganisms

Note: The vertical distribution of microorganisms is associated with the chemical characteristics of the water.

2/59-UM Potter, Louise F. and Gladys E. Baker. 1956. "The Microbiology of Flathead and Rogers Lakes, Montana: I. Preliminary Survey of the Microbial Populations." Ecology. 37:351-355.

Terms: Flathead Lake(76-LJ); Rogers Lake(76-L); Microorganisms

Note: Population and diversity is surveyed and associated with physical parameters of the lakes.

2/60-MSL Renne, Roland R. 1967. "Water Resources--A National View." Montana Academy of Sciences, Proceedings. 27:1-7.

Terms: Water Quality; Water Resources

Note: The issues of water quality and resource development are discussed in political terms at a national scale.

2/61-UM Schmidt, O. John. 1972. "Pollution Control in Sewers." Water Pollution Control Federation, Journal. 44:1384-1392.

Terms: Billings; Municipal Wastes

2/62-MSL Schoenthal, Norman D. 1963. "Some Effects of DDT on Cold Water Fish and Fish-Food Organisms." Montana Academy of Sciences, Proceedings. 23:63-95.

Terms: DDT; Trout; Fish; Aquatic Insects

Note: Controlled experiments to determine effects of varying concentrations of DDT on fish are reported.

Entry Number

2/63-UM Skogen, Duane B. 1970. "Treat Hydrocarbon Processing Industrial Wastes with Bugs." Proceedings, 25th Industrial Waste Conference. Purdue University, May 7-9, 1970. In Purdue University, Engineering Extension Series. Pp. 721-724.

Terms: Industrial Wastes; Billings; Oil Wastes; Continental Oil Co.

2/64-UM Soltero, Raymond A., et.al. 1973. "Effects of Impoundment on the Water Quality of the Bighorn River." Water Research. 7:343-354.

Terms: Bighorn River(43-P); Bighorn Lake(43-P); Reservoirs; Water Chemistry

Note: Alteration of the chemical characteristics of the river as a consequence of impoundment are described.

2/65-UM Soltero, Raymond A. 1969. "Chemical and Physical Findings From Pollution Studies on the East Gallatin River and Its Tributaries." Water Research. 3:687-706.

Terms: East Gallatin River(41-H); Municipal Wastes; Water Chemistry

Note: Chemical-physical water quality is surveyed and pollutants traced to their source.

2/66-MSL Spindler, John C. 1967. "The Biological Aspects of Water Resources." Montana Academy of Sciences, Proceedings. 27:15-19.

Terms: Water Quality; Waste Disposal

Note: This is a general discussion of the problem of water resources and quality control on a national scale.

2/67-MSL Spindler, John C. and Arthur N. Whitney. 1960. "Changes in Bottom Fauna Composition and a Fish Kill Resulting from Pulp Mill Wastes." Montana Academy of Sciences, Proceedings. 19:107-111.

Terms: Clark Fork River(76-M); Benthos; Industrial Wastes; Pulp Wastes

2/68-MSU Spindler, John C. 1955. "Loss of Game Fish in Relation to Physical Characteristics of Irrigation-Canal Intakes." Journal of Wildlife Management. 19:375-382.

Terms: Gallatin River(41-H); Fish; Irrigation Systems

Entry
Number

2/69-UM Stefanich, Frank A. 1951. "The Population and Movement of Fish in Prickly Pear Creek, Montana." American Fisheries Society, Transactions. 81:260-274.

Terms: Prickly Pear Creek(41-I); Fish; Trout

Note: Seasonal and annual flucuation of the population are described.

2/70-MSL Stober, Quentin J. 1963. "Some Limnological Effects of Tiber Reservoir on the Marias River, Montana." Montana Academy of Sciences, Proceedings. 23:111-137.

Terms: Tiber Reservoir(41-N&P); Marias River(41-P); Reservoirs; Plankton

Note: The physical impact of impoundment on the production of plankton is described.

2/71-MSL Stroup, John, et.al. 1965. "Comparative Bacteriological Studies on Two Drinking Water Supplies (Abstract)." Montana Academy of Sciences, Proceedings. 25:87.

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Aquatic Bacteria

2/72-MSL Stuart, David G., et.al. 1971. "Bacteriological Quality of Water as it Reflects Migration of Big Game Populations Under Logging Pressures Within a Semi-Primitive Mountain Watershed (Abstract)." Montana Academy of Sciences, Proceedings. 31:106.

Terms: Aquatic Bacteria

2/73-UM Stuart, David G., et.al. 1971. "Effects of Multiple Use on Water Quality of High-Mountain Watersheds: Bacteriological Investigations of Mountain Streams." Applied Microbiology. 22:1048-1054.

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Aquatic Bacteria; Land Use

Note: The opening of a closed watershed reduced the bacteriological pollution of the stream.

2/74-MSL Tuinstra, Kenneth E., et.al. 1968. "The Toxicity of Organic Wastes on Eggs and Fry of Rainbow Trout." Montana Academy of Sciences, Proceedings. 28:76.

Terms: Bozeman; Trout; Municipal Wastes

Note: In a complex waste the agency of mortality is difficult to identify.

Entry Number

2/75-UM Walter, William G. and Robert P. Bottman. 1967. "Microbiological and Chemical Studies of an Open and Closed Watershed." Journal of Environmental Health. 30:157-163.

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek(41-H); Hyalite Reservoir(41-H); Aquatic Bacteria; Coliforms

2/76-MSL Walter, William G. and Robert P. Bottman. 1967. "The Microbiology of an Open and a Closed Watershed in the Gallatin National Forest of Montana." Montana Academy of Sciences, Proceedings. 27:72-73.

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Aquatic Bacteria

2/77-MSL Weisel, George F. 1972. "Water Quality Studies on the Big Blackfoot and Clark Fork Rivers in Western Montana." In Environmental Pollution in Montana. Robert Bigart, ed. Missoula: Mountain Press Publishing Co., pp. 143-151.

Terms: Blackfoot River(76-F); Clark Fork River(76-G); Water Pollution

Note: A popular comparison of the water quality and water quality problems of the two rivers.

2/78-UM Welch, Eugene B. and John C. Spindler. 1964. "DDT Persistence and its Effect on Aquatic Insects and Fish After an Aerial Application." Water Pollution Control Federation, Journal. 36:1285-1292.

Terms: Boulder River(41-E); DDT; Aquatic Insects; Fish

2/79-MSU Whitney, Arthur N. and Jack E. Bailey. 1959. "Detrimental Effects of Highway Construction on a Montana Stream." American Fisheries Society, Transactions. 88:72-73.

Terms: Channeling; Highway Effects; Flint Creek(76-GJ)

2/80-MSL Wigal, Tom. 1972. "Anaconda Constructs New Water Pollution Control System for the Clark Fork." In Environmental Pollution in Montana. Robert Bigart, ed. Missoula: Mountain Press Publishing Co., pp. 153-161.

Terms: The Anaconda Co.; Industrial Waste Treatment

2/81-WQB Willems, Don G. 1970. "Feedlot Pollution." In Proceedings of the Annual Agricultural Seminar Sponsored by the Montana Cooperative Extension Service, pp. 31-34.

Terms: Feeders

Entry
Number

2/82-MSL Wollitz, Robert E. 1962. "Effects of Certain Commercial Fish Toxicants on the Limnology of Three Cold-Water Ponds, Montana." Montana Academy of Sciences, Proceedings. 22:54-81.

Terms: Fish Toxins; Toxins; Fishkill; Fish Food Organisms

Note: Physical, chemical and biological alterations in three small ponds are studied following the experimental application of a toxicant.

2/83-UM Wright, John C. and Ross M. Horrall. 1967. "Heat Budget Studies on the Madison River Yellowstone National Park." Limnology and Oceanography. 12:578-583.

Terms: Madison River(41-F); Gibbon River (Wyoming); Firehole River (Wyoming); Yellowstone National Park; Thermal Pollution; Thermal Properties; Heat Budget

2/84-UM Wright, John C. and I.K. Mills. 1967. "Productivity Studies on the Madison River, Yellowstone National Park." Limnology and Oceanography. 12:568-577.

Terms: Madison River(41-F); Gibbon River (Wyoming); Firehole River (Wyoming); Primary Productivity; Productivity

Note: Downstream declines in productivity are correlated with lower concentration of CO_2.

2/85-UM Wright, John C. 1965. "The Population Dynamics and Production of Daphnia in Canyon Ferry Reservoir, Montana." Limnology and Oceanography. 10:583-590.

Terms: Canyon Ferry Reservoir(41-I); Daphnia; Zooplankton; Population Growth; Productivity

2/86-UM Wright, John C. 1961. "The Limnology of Canyon Ferry Reservoir: IV. The Estimation of Primary Production From Physical Limnological Data." Limnology and Oceanography. 6:330-337.

Terms: Canyon Ferry Reservoir(41-I); Primary Productivity; Productivity

2/87-UM Wright, John C. 1960. "The Limnology of Canyon Ferry Reservoir: III. Some Observations on the Density Dependence of Photosynthesis and its Cause." Limnology and Oceanography. 5:356-361.

Terms: Canyon Ferry Reservoir(41-I); Primary Productivity; Photosynthesis

Note: The relationship between photosynthesis and standing crop is non-linear.

Entry
Number

2/88-UM Wright, John C. 1959. "Limnology of Canyon Ferry Reservoir: II. Phytoplankton Standing Crop and Primary Production." Limnology and Oceanography. 4:235-245.

Terms: Canyon Ferry Reservoir(41-I); Phytoplankton; Primary Productivity; Productivity

2/89-UM Wright, John C. 1958. "The Limnology of Canyon Ferry Reservoir: I. Phytoplankton-Zooplankton Relationships in the Euphotic Zone During Septermber and October, 1956." Limnology and Oceanography. 3:150-159.

Terms: Canyon Ferry Reservoir(41-I); Phytoplankton; Zooplankton

2/90-UM Young, Robert T. 1935. "The Life of Flathead Lake, Montana." Ecological Monographs. 5:91-163.

Terms: Flathead Lake(76-LJ); Ecology

Note: A now classic descriptive ecology of Flathead Lake.

Chapter 3

GOVERNMENT PUBLICATIONS

Entry Number

3/1-WQB Anaconda Company (and others). 1973(?). Warm Springs Creek Watershed, Cooperative Watershed Management Plan.

Terms: Warm Springs Creek(76-G); Industrial Wastes

3/2-MSL Beartooth Resource Conservation and Development Project (and other agencies). 1973. A Study of Erosion and Sedimentation, Montana Portion, Clarks Fork Yellowstone River Basin. Prepared for the 1973 Montana Legislative Assembly.

Terms: Clarks Fork River(43-D); Erosion; Sediments

Note: This is a comprehensive study of the sedimentation-erosion problem with suggestions for control.

3/3-WQB Cascade (County). Health Department. 1973. A Study of Sewage Contamination of Belt Creek Above Belt, Montana. By Pat M. Goodover.

Terms: Belt Creek(41-Q); Municipal Wastes

Note: A systematic survey of sewage disposal facilities along and adjacent to the creek. Water quality is high and degradation less than expected.

3/4-CSU Colorado. State University (Fort Collins). Civil Engineering Department. 1972. A Remote Sensing Study of Sediment in the Clarks Fork, Yellowstone River. By James F. Ruff, et.al.

Terms: Clarks Fork (43-D); Sediments; Remote Sensing

Note: "Results of the study indicate that aerial color infrared photography and thermal infrared imagery are practical tools for locating and identifying inflow of sediment-laden water to a river system."

3/5-WQB Deer Lodge County. Commissioners. 1973. Georgetown Lake Pre-Study.

Terms: Reservoirs

Entry Number

3/6-WQB Missouri River Basin Commission. 1974. Review of Ongoing (FY1974) and Budgeted (FY1975) Planning and Implementation Programs of Fifteen Federal Agencies as Related to the Water Resources of the Missouri River Basin.

Terms: Water Resources Development

3/7-MSL Montana. 1947-Present. Revised Codes of Montana.

Terms: Water Law; Municipal Water; Water Pollution Control

Note: Current laws of the State of Montana are found in Title 69 ("Public Health and Safety") Chapter 48 ("Water Pollution") and Chapter 49 ("Public Water Supply"). These codes are annoted so that the user is directed to earlier laws, legal articles of a general nature and relevant court cases.

3/8-MSL Montana. Agricultural Experiment Station. 1971. A Study of the Economic, Legal and Institutional Aspects of Montana's Water Resources Development. Bulletin 648 by Chennat Gopalakrishnan.

Terms: Water Law

Note: This is a review of Montana's Water Law including laws relating to water conservation.

3/9-MSL Montana. Bureau of Mines and Geology. Index Map and Bibliography of Ground-Water Studies in Montana. Special Publication 37.

Terms: Groundwater (Bibliography-Montana)

3/10-MSL _____. 1974. Hydrologic Effects of Strip Coal Mining in Southeastern Montana--Emphasis: One Year of Mining Near Decker. Bulletin 93 by Wayne A. Van Voast.

Terms: Decker; Coal Mines; Strip Mines; Hydrology

3/11-MSL _____. 1973. Geology and Water Resources of Eastern Part of Judith Basin, Montana. Bulletin 87 by R.D. Feltis.

Terms: Groundwater Geology; Water Chemistry; Judith Basin

3/12-MSL _____. 1972. Hydrology of the West Fork Drainage of the Gallatin River, Southwestern Montana, Prior to Commercial Recreational Development. Special Publication 57 by W.A. Van Voast.

Terms: Gallatin River(41-H); Groundwater Quality

Entry Number

3/13-MSL Montana. Bureau of Mines and Geology. 1971. Surficial Geology and Water Resources of the Tobacco and Upper Stillwater River Valleys, Northwestern Montana. Bulletin 81 by D.L. Coffin, et.al.

Terms: Tobacco River(76-D); Stillwater River(76-LJ); Geomorphology; Water Resources

3/14-MSL _____. 1969. Hydrogeology of the Upper Silver Bow Creek Drainage Area, Montana. Bulletin 75 by M.K. Botz.

Terms: Silver Bow Creek(76-G); Hydrogeology; Groundwater Quality

3/15-MSL _____. 1968. Geology and Ground Water Resources of the Kalispell Valley, Northwestern Montana. Bulletin 68 by R.L. Konizeski, et.al.

Terms: Flathead River(76-LJ); Groundwater Quality

3/16-MSL _____. 1968. Ground Water Resources of the Northern Powder River Valley, Southeastern Montana. Bulletin 66 by O.J. Taylor.

Terms: Powder River Valley(42-J); Groundwater Quality

3/17-MSL _____. 1967. Water Resources of the Cut Bank Area, Glacier and Toole Counties, Montana. Bulletin 60 by E.A. Zimmerman.

Terms: Glacier County; Toole County; Cut Bank; Groundwater Quality

3/18-MSL _____. 1966. Basic Water Data Report No. 2 Western and Southern Parts of Judith Basin, Montana. Bulletin 50-B by E.A. Zimmerman.

Terms: Judith Basin; Groundwater Quality

3/19-MSL _____. 1966. Geology and Ground-Water Resources of Western and Southern Parts of Judith Basin, Montana. Bulletin 50-A by E.A. Zimmerman.

Terms: Judith Basin; Groundwater Quality

3/20-MSL _____. 1965. Geochemical Reconnaissance Stream-Sampling in Flathead and Lincoln Counties, Montana. Bulletin 48 by U.M. Sahinen, et.al.

Terms: Flathead County; Lincoln County; Suspended Load; Sediment Sampling

3/21-MSL _____. 1965. Geology and Ground-Water Resources of the Missoula Basin, Montana. Bulletin 47 by R.G. McMurtrey, et.al.

Terms: Clark Fork River(76-M); Missoula Basin; Groundwater Quality

Entry Number

3/22-MSL Montana. Bureau of Mines and Geology. 1961. Preliminary Report on the Geology and Ground-Water Resources of the Northern Part of the Deer Lodge Valley, Montana. Bulletin 21 by R.L. Konizeski, et.al.

Terms: Clark Fork River(76-G); Deer Lodge Valley; Groundwater Quality

3/23-MSL _____. 1960. Preliminary Report on the Geology and Ground-Water Resources of Northern Blaine County, Montana. Bulletin 19 by E.A. Zimmerman.

Terms: Blaine County; Milk River(40-J); Groundwater Quality

3/24-MSL _____. 1959. Preliminary Report on the Geology and Water Resources of the Bitterroot Valley, Montana. Bulletin 9 by R.G. McMurtrey, et.al.

Terms: Bitterroot River(76-H); Groundwater Quality

3/25-MSL _____. 1958. The Ground-Water Situation in Montana. Information Circular 26 by S.L. Groff.

Terms: Groundwater Quality

3/26-MSL _____. 1956. Progress Report on the Geology and Ground-Water Resources of the Eastern Part of the Bitterroot Valley, Montana. Information Circular 16 by R.G. McMurtrey and R.L. Konizeski.

Terms: Groundwater Quality; Bitterroot River(76-H)

3/27-MSL _____. 1935. Geology and Ground-Water Resources of Southeastern Montana. Memoir 14 by E.S. Perry.

Terms: Groundwater Quality; Southeastern Montana

3/28-MSL _____. 1934. Physiography and Ground-Water Supply in the Big Hole Basin, Montana. Memoir 12 by E.S. Perry.

Terms: Big Hole Basin; Groundwater Quality

3/29-MSL _____. 1933. Possibilities of Ground-Water Supply for Certain Towns and Cities of Montana. Miscellaneous Contributions 2 by E.S. Perry.

Terms: Groundwater Quality; Municipal Water

Entry
Number

3/30-MSL Montana. Bureau of Mines and Geology. 1932. Artesian Wells as a Source of Water for Municipal Supply at Fort Benton, Montana. Miscellaneous Contributions 4 by E.S. Perry.

Terms: Groundwater Quality; Fort Benton; Municipal Water; Artesian Wells

3/31-MSL _____. 1932. Artesian Wells as a Source of Water for the Winnett Irrigation Project, Montana. Miscellaneous Contributions 1 by E.S. Perry.

Terms: Winnett Irrigation Project; Groundwater Quality

3/32-MSL _____. 1932. Ground-Water Resources of Judith Basin, Montana. Memoir 7 by E.S. Perry.

Terms: Judith Basin; Groundwater Quality

3/33-MSL _____. 1932. Shallow Wells Near Terry, Montana as a Source of Irrigation Water. Miscellaneous Contributions 3 by E.S. Perry.

Terms: Terry; Groundwater Quality

3/34-MSL _____. 1931. Ground-Water in Eastern and Central Montana. Memoir 2 by E.S. Perry.

Terms: Groundwater Quality; Eastern Montana; Central Montana

3/35-MSL Montana. Department of Highways (and other agencies). 1972. Preliminary Evaluation of Channel Changes Designed to Restore Fish Habitat. Prepared by William A. Hunt and Richard J. Graham.

Terms: Channel Design; Fish; Highway Engineering

Note: Recommends methods of construction for altered channels in order to maintain the fish habitat.

3/36-MSL Montana. Department of Natural Resources and Conservation. 1973. Proposed Hungry Horse Weather Modification Project, Final Environmental Impact Statement.

Terms: Hungry Horse Reservoir(76-J); Weather Modification

3/37-MHS _____. 1971. Water Resources of the Upper Blackfoot River Valley, West Central Montana. Technical Report Series 1 by D.L. Coffin and K.R. Wilke.

Terms: Water Quality; Blackfoot River(76-F)

Entry
Number

3/38-MSL Montana. Department of Natural Resources. Water Resources Division. 1974. Prickly Pear Creek Water Division Proposal, Draft Environmental Impact Statement.

Terms: Prickly Pear Creek(41-I); Diehl Development Corporation; Urbanization; Municipal Wastes

Note: Evaluates a proposal to divert water to urban uses.

3/39-MSL Montana. Department of Planning and Economic Development. 1970. Comprehensive Area-Wide Water Sewer Plan. In 17 volumes.

Terms: Municipal Wastes; Municipal Water

Note: A county by county survey of municipal water and waste facilities.

3/40-WQB Montana. Fish and Game Commission. 1971. Progress Report, Blackfoot River Water Quality Study.

Terms: Blackfoot River(76-F); Water Quality

3/41-WQB Montana. Fish and Game Department. Date. Job Progress Reports.

Note: This is a series of reports on the various activities conducted by the Fish and Game Department. The following reports contain direct data and discussion of water quality problems: (Project and Job No.)

F-33-R-6/II-a--Seasonal Measurement of Basic Water Chemistry, Plankton Production and Certain Physical Characteristics of Flathead Lake (1972).

F-33-R-5/II-a--Seasonal Measurement of Basic Water Chemistry, Plankton Production and Certain Physical Characteristics of Flathead Lake (1971).

F-12-R-12/I--Western Montana Fishery Study, Inventory of Waters of the Project Area (Georgetown Lake, Browns Lake) (1967)

F-12-R-11/III--Western Montana Fisheries Study, Aerater Evaluation (Browns Lake, Georgetown Lake) (1966).

F-8-R-20/I-a--Northwest Montana Fisheries Study, Inventory of Waters of the Project Area (Prospect Creek, Lake Creek, Bull River) (1970).

F-7-R-21/I-a--Northwest Montana Fisheries Study, Inventory of Waters of the Project Area (Flathead River) (1972).

F-7-R-21/I-b--Northwest Montana Fisheries Study, Fish Management Surveys (Swan River, Prospect Creek, Lake Creek, Bull River) (1972).

F-7-R-20/I-b--Northwest Montana Fisheries Study, Fish Management Surveys (Lake Mary Ronan, Kilbrennan Lake, Bull Lake) (1970).

(cont. p. 38)

Entry Number

3/41-WQB (cont.) F-7-R-18/I--Northwest Montana Fisheries Study, Inventory of Waters of the Project Area (Numerous Lakes and Streams) (1969).
F-5-R-21/I-a--Central Montana Fisheries Study, Inventory of Waters of the Project Area (Sun River) (1972).
F-5-R-14/II--Evaluation of Fish Habitat Destruction in Little Prickly Pear Creek Due to Construction of Interstate Highway 15 (1965).
F-5-R-10/I--Inventory of Waters of the Project Area (Belt Creek) (1961).
FW-2-R-1/I-b--Beartooth-Absaroka Wildlife-Mining Research, Planning Inventory, Fisheries (Stillwater River) (1973).

3/42-WQB Montana. Fish and Game Department. 1962. The Effects of an Aerial Application in the Boulder River System and Colconda Creek, Near Boulder, Montana.

Terms: DDT; Boulder River(41-E)

3/43-MSL Montana. Fish and Game Department (and other agencies). 1959. Effects of an Aerial Application of DDT on Fish and Aquatic Insects in Montana, Final Report. By R.J. Graham and David O. Scott.

Terms: DDT; Fish; Aquatic Insects

3/44-FG _____. 1958. Effects of Forest Insect Spraying on Trout and Aquatic Insects in Some Montana Streams. By R.J. Graham and D.O. Scott.

Terms: DDT; Fish; Aquatic Insects

3/45-WQB Montana. Forest and Conservation Experiment Station. 1970. Quality and Seasonal Fluctuation of Headwater Streams in Western Montana. Bulletin 38 by George F. Weisel and Robert L. Newell.

Terms: Watersheds; Water Quality

3/46-MHS Montana. State Board of Health. 1967. Information Bulletin: Public Hearing on a Proposed Revision of Water Quality Standards and Water Use Classifications for Montana.

Terms: Water Quality Control; Water Law; Regulations; Legislation

3/47-WQB _____. 1965. Progress Report on Reduction of Wastes Reaching the Yellowstone River Drainage in Montana.

Terms: Yellowstone River; Water Quality Control

Entry
Number

3/48-MSL Montana. State Board of Health. 1965. Report of a Stream Survey of the St. Mary and Belly River Drainages of Montana. Report 65-2.

Terms: Water Quality; Water Chemistry; Belly River(40-T); St. Mary River(40-T)

3/49-MHS _____. 1963. Water Pollution in the Yellowstone River Drainage in Montana. Progress Report 63-1.

Terms: Yellowstone River Basin; Water Quality Control

3/50-MSL _____. 1961. Macro-Invertebrates of the Clark Fork River, Montana. Water Pollution Control Report 61-1 by Robert C. Averett.

Terms: Clark Fork River; Aquatic Insects

Note: This is a continuation of Water Pollution Control Report 59-1.

3/51-MHS _____(and other agencies). 1961. Three Forks Area Water Quality Study. Progress Report 2.

Terms: Missouri River Drainage Basin; Three Forks Area; Water Quality

3/52-MHS _____(and other agencies). 1960. Three Forks Area Water Quality Study. Progress Report 1.

Terms: Missouri River Drainage Basin; Three Forks Area; Water Quality

3/53-MHS _____. 1960. Water Pollution in the Missouri River Drainage in Montana. Progress Report 60-1.

Terms: Missouri River Basin; Water Quality Control; Municipal Wastes

Note: This is one of a series of reports designed to aid in the establishment of stream classification and water quality control standards.

3/54-MSL _____. 1959. An Extensive Chemical, Physical, Bacteriological and Biological Survey, Columbia River Drainage in Montana. Water Pollution Control Report 59-1 by John C. Spindler.

Terms: Columbia River Drainage Basin; Water Pollution

Note: The study was undertaken to aid in the classification of streams and the establishment of water quality standards.

Entry Number

3/55-MHS Montana. State Board of Health. 1959. Stream Classification Standards.

Terms: Water Quality Standards; Water Quality; Classification

3/56-WQB _____. 1957. Pollution Studies of the Missouri River in the Great Falls Area. By C.W. Brinck, et.al.

Terms: Missouri River(41-Q); Municipal Wastes; Great Falls

3/57-WQB _____(and other agencies). 1956. Pollution of the Yellowstone River as Related to Taste and Odor Problems in Municipal Water Supplies in Montana and North Dakota(Administrative Copy).

Terms: Yellowstone River; Municipal Water; Odor; Taste

3/58-MHS _____(and other agencies). 1955. Summary Report on Pulp Mill Sites in Relation to Mill Effluent Effects on Water Quality in Relation to Mill Effluent Effects on Water Quality in Streams in Western Montana and Northern Idaho.

Terms: Pulp Wastes; Industrial Wastes

Note: A brief survey of the sources of pulp mill wastes and their effects.

3/59-MHS _____(and other agencies). 1955. Yellowstone River Pollution Study.

Terms: Water Pollution; Water Quality Control; Yellowstone River

3/60-MSL _____(and other agencies). 1953. A Comprehensive Program for Control of Water Pollution in the Missouri River Drainage Basin. Water Pollution Series No. 56 of the U.S. Department of Health, Education and Welfare.

Terms: Water Pollution Control; Water Quality Control; Missouri River Basin

3/61-WQB _____(and other agencies). 1952. Yellowstone River Drainage Basin, A Cooperative State-Federal Report on Water Pollution.

Terms: Yellowstone River; Water Quality Control

3/62-WQB _____(and other agencies). 1951. Missouri-Souris Development Area Water Pollution Investigation.

Terms: Water Pollution; Missouri River (lower)

Note: An early survey of the water pollution problem in the Lower Missouri River.

Entry Number

3/63-WQB Montana. State Board of Health and Environmental Sciences. 1972. Missouri River Basin Above Ervin Ridge, Interim Water Quality Management Plan (Draft).

Terms: Missouri River (upper); Water Quality Control; Water Pollution Control; Acid Mine Water; Mine Wastes; Sun River(41-K); Muddy Creek(41-K); Acid Mine Drainage in the Hughesville, Montana Area; Sun River Survey; Irrigation

Note: This study lists potential and actual pollution sources on the river system. Techniques for addressing these problems are discussed. In addition the draft contains substantive statements on acid mine water problems and the problems created by the Sun River Irrigation Project.

3/64-WQB Montana. State Department of Health. N.D. Missouri River Basin Below Ervin Ridge Interim Water Quality Management Plan (Draft).

Terms: Missouri River (lower); Water Quality Control; Water Pollution Control

Note: This study lists potential and actual pollution sources on the river system. Techniques for addressing these problems are discussed.

3/65-WQB _____. 1974. Environmental Impact Statement for the Proposed Expansion of the Hoerner-Waldorf Pulp and Paper Mill at Missoula, Montana (Draft).

Terms: Missoula; Hoerner-Waldorf Co.; Pulp Wastes; Industrial Wastes

3/66-WQB _____. 1967(?). Yellowstone River Survey in Billings, Montana. By John C. Spindler.

Terms: Yellowstone River(43-Q); Municipal Wastes; Industrial Wastes

3/67-MHS Montana. University (Missoula). 1902. A Biological Reconnaissance in the Vicinity of Flathead Lake. Bulletin of the University of Montana 10. Biological Series 3 by Morton J. Elrod.

Terms: Ecological Distribution; Flathead Lake (76-LJ)

Note: An early community ecological study of the area which forms a basis of most later studies relating to water quality.

Entry
Number

3/68-WQB Montana. University (Missoula). Biological Station. 1973. Final Report to the Environmental Protection Agency; Land Use and Water Quality in the Flathead Drainage.

Terms: Methodology; Water Quality Control

3/69-MSL _____. 1972. Preliminary Report to the Environmental Protection Agency; Water Quality and Related Land Use in the Flathead Drainage; Part II. An Evaluation of Existing Methodologies Used for Analyzing and Maintaining Water Quality.

Terms: Methodology; Water Quality Control

3/70-WQB _____. 1972. Preliminary Report to the Environmental Protection Agency; Water Quality and Related Land Use in the Flathead Drainage; Part III. Proposed Methodologies for Assessment, Prevention and Abatement of Water Quality Problems in the Flathead Lakes Basin.

Terms: Methodology; Water Quality Control

3/71-MSL Montana. University Joint Water Resources Research Center. 1974(?). Description, Distribution and Ecology of the Rotifer and Crustaceon Plankton Communities, Flathead Lake, Montana. Report 39 by John F. Tibbs.

Terms: Plankton; Flathead Lake(76-LJ)

3/72-MSL _____. 1974. Determination of the Micro-Level Temperature During Lake Cooling, Ice Formation, Ice Melt and Break Up of the Ice Cover of a Mountain Lake, Holland Lake, Missoula County. Report 40 by Ludwig Browman.

Terms: Holland Lake(76-K); Ice; Temperature

3/73-MSL _____. 1974. The Fate and Effects of Pesticides in the Aquatic Environment of the Flathead Lake Drainage Area. Report 47 by A.R. Gaufin.

Terms: Flathead Lake(76-LJ); Pesticides

3/74-MSL _____. 1974. An Investigation into the Extent and Cause of Eutrophication in Canyon Ferry Reservoir, Montana. Report 50 by John C. Wright, et.al.

Terms: Canyon Ferry Reservoir(41-I); Eutrophication

Entry Number

3/75-MSL Montana. University Joint Water Resources Research Center. 1974. An Investigation of the Water Quality and Productivity of Polsen Bay, Flathead Lake, Montana. Report 48 by A.R. Gaufin.

Terms: Flathead Lake(76-LJ); Primary Productivity

3/76-MSL _____. 1974. Microbial and Chemical Studies in a Watershed Used for Municipal Supply and Waste Disposal. Report 41 by W.G. Walter and J.J. Jezeski.

Terms: Bozeman Creek(41-H); Mystic Reservoir(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Aquatic Bacteria

3/77-MSL _____. 1974. Testacea (Protozoa:Sarcodina) as an Indicator of Water Quality in Western Montana. Report 49 by John F. Tibbs.

Terms: Protozoa; Aquatic Microorganisms

3/78-MSL _____. 1973. Cation Adsorption and Desorption Rates in Natural Water Systems. Report 45 by G.K. Pagenkopf.

Terms: Cation Adsorption

3/79-MSL _____. 1972. Sources of Sediment in a Mountain River Basin. Report 28 by M.G. Klages.

Terms: Gallatin River(41-H); East Gallatin River(41-H); Sediment Production; Erosion

3/80-MSL _____. 1972. Water Resources in Sourdough and Hyalite Creek Watersheds--A Comparative Study of Quality and Hydrology. Report 23 by Robert L. Sanks and Theodore T. Williams.

Terms: Bozeman Creek(41-H); Hyalite Creek(41-H); Hydrology; Lumbering; Municipal Water

Note: This study attempts to determine if a watershed closed to the public should remain closed.

3/81-MSL _____. 1971. Microbiological Studies in an Open and Closed Watershed. Report 17 by William G. Walter and David G. Stuart.

Terms: Bozeman Creek(41-H); Mystic Creek(41-H); Hyalite Creek (41-H); Hyalite Reservoir(41-H); Aquatic Bacteria

Entry
Number

3/82-MSL Montana. University Joint Water Resources Research Center. 1968. Water, Water Everywhere But ... A Study of the Politico-Administrative Aspects of Water Development in Montana. Report 9 by Richard G. Sheridan.

Terms: Water Law; Water Quality Control; Water Resources Development

Note: This is an extensive study of the political factors surrounding water development, including water quality problems, in Montana.

3/83-WQB Montana. Water Quality Bureau. 1975. Water Quality Management Plan; Flathead River Basin, Montana.

Terms: Flathead River Basin; Water Quality Control

3/84-WQB _____. 1975. Water Quality Management Plan; Lower Missouri River Basin, Montana.

Terms: Missouri River Basin (Lower); Water Quality Control

3/85-WQB _____. 1975. Water Quality Management Plan; Musselshell River Basin, Montana.

Terms: Musselshell River Basin; Water Quality Control

3/86-WQB _____. 1975. Water Quality Management Plan; St. Mary River Basin, Montana.

Terms: St. Mary River Basin; Water Quality Control

3/87-WQB _____. 1975. Water Quality Management Plan; Upper Clark Fork River Basin, Montana.

Terms: Clark Fork River Basin (Upper); Water Quality Control

3/88-WQB _____. 1975. Water Quality Management Plan; Upper Missouri River Basin, Montana.

Terms: Missouri River Basin (Upper); Water Quality Control

3/89-WQB _____. 1975. Water Quality Management Plan; Upper Yellowstone River Basin, Montana.

Terms: Yellowstone River Basin (Upper); Water Quality Control

Entry Number

3/90-WQB Montana. Water Quality Bureau. 1974. Water Quality Management Plan; Kootenai River Basin, Montana.

Terms: Kootenai River Basin; Water Quality Control

3/91-WQB _____. 1974. Water Quality Management Plan; Lower Clark Fork River Basin, Montana.

Terms: Clark Fork River Basin (Lower); Water Quality Control

3/92-WQB _____. 1974. Water Quality Management Plan; Lower Yellowstone River Basin, Montana.

Terms: Yellowstone River Basin (Lower); Water Quality Control

3/93-WQB _____. 1974. Water Quality Management Plan; Marias River Basin, Montana.

Terms: Marias River Basin; Water Quality Control

3/94-WQB _____. 1974. Water Quality Management Plan; Middle Missouri River Basin, Montana.

Terms: Missouri River Basin (Middle); Water Quality Control

3/95-WQB _____. 1974. Water Quality Management Plan; Middle Yellowstone River Basin, Montana.

Terms: Yellowstone River Basin (Middle); Water Quality Control

3/96-WQB _____. 1974. Water Quality Management Plan; Milk River Basin, Montana.

Terms: Milk River Basin; Water Quality Control

3/97-WQB _____. 1974. Water Quality Management Plan; Missouri-Sun-Smith River Basin, Montana.

Terms: Missouri River Basin; Sun River Basin; Smith River Basin; Water Quality Control

3/98-WQB _____. 1973. Montana Water Pollution Control Program Plan.

Terms: Water Quality Control; Water Quality Standards

Note: This is a report on proposed programs prepared annually by the bureau and submitted to the Environmental Protection Agency.

Entry
Number

3/99-WQB Montana. Water Quality Bureau. 1973. Water Quality Management Plan; Little Missouri River Basin, Montana.

Terms: Little Missouri River Basin; Water Quality Control

3/100-WQB _____. 1972. Yellowstone County Water Pollution Control Report.

Terms: Yellowstone County; Water Quality Control; Water Quality Standards

3/101-WQB _____. 1972. Yellowstone River Basin Interim Water Quality Management Plan.

Terms: Yellowstone River; Water Quality Control; Water Pollution Control

Note: This study lists potential and actual pollution sources on the river system. Techniques for addressing these problems are discussed.

3/102-WQB _____. 1971. Clark Fork River Basin Interim Water Quality Management Plan (Final Draft).

Terms: Clark Fork River; Water Quality Control; Water Pollution Control

Note: This study lists potential and actual pollution sources on the river system. Techniques for addressing these problems are discussed.

3/103-WQB _____. 1906(?)-Present. "Basic Water Quality Data Files."

Terms: Municipal Water; Industrial Wastes; Data Collections

Note: These files contain the results of regular and periodic chemical, physical and biological water quality sample analyses. From 1906 through 1972 the files are arranged alphabetically by county and then by town. In 1972 a new system was initiated. Stream samples are arranged by the river basin number and then alphabetically by name. Industrial effluent samples are arranged alphabetically by the name of the company. Private well and spring samples are arranged alphabetically by county and then legal description. Municipal water supply and treatment samples are arranged alphabetically by the name of the town. Lake samples are arranged by river basin number and then alphabetically by the name of the lake. Early records are microfilmed and forthcoming records will be available on computer tape.

Entry
Number

3/104-MHS Montana. Water Resources Board. 1970. The Anaconda Company's Proposal for Development of the Heddleston Mining District, Lewis and Clark County, Montana.

Terms: Blackfoot River(76-F); Anaconda Co.; Industrial Wastes; Mine Wastes

3/105-WQB North Dakota. State Department of Health. N.D. Missouri River Basin; Plan for Implementation of Water Quality Standards.

Terms: Water Quality Standards

3/106-WQB Northern Great Plains Resources Program. 1974. Draft Interim Report from the Water Quality Subgroup.

Terms: Missouri River; Coal Mines

Note: Present water quality and prospective effects of coal development on water quality in the Northern Great Plains are discussed in considerable detail.

3/107-WQB Oklahoma. University (Norman). School of Civil Engineering and Environmental Sciences. 1973. Water Quality Study of the Clearwater River and Selected Tributaries. By Leale E. Streebin, et.al.

Terms: Clearwater River(76-F); Lolo National Forest; Water Chemistry; Algae

3/108-WQB _____. 1972. Rock Creek II, a Continuation of the Rock Creek Water Quality Study. By Leale E. Streebin, et.al.

Terms: Rock Creek(76-E); Water Quality; Water Chemistry

Note: Compares major water quality parameters for sample sites along Rock Creek and its tributaries for 1970 and 1971. Rock Creek waters are of high quality and annual flucuations of water quality are low and man-caused. However, low nutrient concentrations limit the value of the stream for sports fishing.

3/109-WQB _____. 1972. Water Quality Survey, Lolo National Forest, Missoula, Montana. By Leale E. Streebin, et.al.

Terms: Rattlesnake Creek(76-M); Schwartz Creek(76-G); Lolo Creek (76-H); Fish Creek(76-M); Monture Creek(76-F); Clearwater River (76-F); Lolo National Forest; Water Chemistry; Land Use

Note: Considers major water quality parameters and the significance of land use activities to the quality of several watersheds. Attempts to define a norm of National Forest stream quality against which other streams may be judged.

Entry Number

3/110-WQB Pacific Northwest River Basins Commission. 1972. Columbia North-Pacific Region; Comprehensive Framework Study.

Terms: Columbia River System; Water Quality Control

3/111-MSL U.S. Bureau of Outdoor Recreation. 1974. The Wild, Scenic and Recreational Potentials of the Yellowstone River from Gardiner to Pompeys Pillar in Montana.

Terms: Yellowstone River(43-D&Q); Recreation Facilities

3/112-WQB U.S. Bureau of Reclamation. 1972. Report on Resources of Eastern Montana Basins.

Terms: Water Resources; Water Quality; Water Resources Development

3/113-MSL U.S. Department of Interior. Office of Saline Water. 1972. Feasibility of Desalting Municipal Water Supplies in Montana. Research and Development Progress Report 783 by Ian C. Watson and Fred M. Heide.

Terms: Municipal Water; Desalination

Note: A feasibility study and cost-benefit analysis.

3/114-MSL U.S. Environmental Protection Agency. 1974. Clark Fork River Study, Montana, July-August, 1973.

Terms: Clark Fork River(76-M); Aquatic Bacteria; Coliforms

3/115-MSL _____. 1973. Limnology of Yellowtail Reservoir and the Bighorn River. By John C. Wright and Raymond A. Soltero.

Terms: Water Chemistry; Phytoplankton; Primary Productivity; Bighorn River(43-P); Yellowtail Reservoir(43-P)

3/116-MSL _____. 1972. A Water Quality Study of the Upper Clark Fork River and Selected Tributaries.

Terms: Clark Fork River(76-G); Heavy Metals

3/117-WQB _____. 1971. Yellowstone National Park Baseline Water Quality Survey Report (Preliminary).

Terms: Yellowstone National Park; Water Quality

Note: This is an extensive evaluation of water quality data gathered in the 1970 season.

Entry
Number

3/118-WQB U.S. Environmental Protection Agency. 1968. Inventory; Municipal Waste Facilities, a Cooperative State Report. Vol. 8 (includes Montana).

Terms: Municipal Wastes

Note: This is a census, community by community, of municipal waste treatment facilities. Earlier censuses were conducted in 1940, 1945, 1957 and 1962 by the Federal Water Pollution Control Administration. Title varies slightly.

3/119-UM U.S. Federal Water Pollution Control Administration. 1970. Summary of Water Quality Standards for Interstate Waters of Montana.

Terms: Water Quality Control; Interstate Rivers

Note: The title on the cover is State of Montana, Water Quality Standards Summary. The GPO class number is I67.8:M76.

3/120-MSL _____. 1969. Flathead Lake Bacteriological Study. By Ralph R. Bauer.

Terms: Aquatic Bacteria; Coliforms; Flathead Lake(76-LJ)

Note: Densities of aquatic bacteria correlate with the density of shore line development.

3/121-MSL _____. 1969. Water Quality Standards Summary.

Terms: Water Quality Standards

Note: GPO number is I67.8:M76.

3/122-WQB _____. 1967. Immediate Water Pollution Control Needs, Yellowstone River Drainage Basin, Sub-basin 2.

Terms: Yellowstone River Drainage Basin; Water Quality Control

3/123-WQB _____. 1966. Water Quality Control Study; Powder River Basin, Kaycee Unit, Wyoming; A Study of the Need and Value of Storage for Water Quality Control.

Terms: Powder River (Wyoming); Water Quality Control

3/124-WQB U.S. Federal Water Quality Administration. 1970. Review and Evaluation of the Water Quality Program in Montana.

Terms: Water Law; Water Quality Control; Water Quality Standards

Entry
Number

3/125-MSL U.S. Fish and Wildlife Service, Logan, Utah. 1957. Effects of Forest Insect Spraying on Trout and Aquatic Insects in Some Montana Streams. By Oliver B. Cope, et.al.

Terms: DDT; Fish; Aquatic Insects

3/126-FG U.S. Forest Service. 1972. Flathead Wild and Scenie River Study Report.

Terms: Flathead River; River Basin Development

3/127-FG U.S. Forest Service. Northern Region. 1974. Rock Creek Fisheries Habitat and Water Quality Study. Intragravel Environmental Progress Report 3 by Gordon N. Haugen.

Terms: Rock Creek(76-E); Fish

3/128-FG _____. 1974. Rock Creek Fishery Habitat and Water Quality Study. Water Quality Summary Report 1 by Gordon N. Haugen.

Terms: Rock Creek(76-E); Fish; Water Quality

3/129-WQB _____. 1971. Rock Creek Fishery Habitat and Water Quality Study. Summary Report 1 by Gordon N. Haugen.

Terms: Rock Creek(76-E); Lolo National Forest; Deer Lodge National Forest; Fish; Water Quality

Note: Rock Creek is of a quality to support a salmonid sport fishery. However, man-made disturbance on the upper and lower portions of the creek have reduced the salmonid carrying capacity.

3/130-WQB U.S. Geological Survey. 1973. Appraisal of the Quality of Ground Water in the Helena Valley, Montana. Water-Resources Investigations 32-73 by K.R. Wilke and D.L. Coffin.

Terms: Ground Water Quality; Helena Valley

3/131-WQB _____. 1973. Water Resources of the Northern Cheyenne Indian Reservation and Adjacent Area, Southeastern Montana. Hydrologic Investigations Atlas HA-468 by William B. Hopkins.

Terms: Groundwater Quality; Northern Cheyenne Indian Reservation

Entry
Number

3/132-MHS U.S. Geological Survey. 1972. Geological Survey Research 1972. Professional Paper 800-C. Contains article by M.V. Johnson and R.J. Omang (pp.253-256) entitled "Degradation of the Earthquake Lake Outflow Channel, Southwestern Montana."

Terms: Quake Lake (Earthquake Lake)(41-F); Earthquake Lake (Quake Lake)(41-F); Erosion; Sediments; Degradation of the Earthquake Lake Outflow Channel, Southwestern Montana

3/133-MHS _____. 1972. Geology and Water Resources of the Bitterroot Valley, Southwestern Montana. Water-Supply Paper 1889 with a section on groundwater quality by H.A. Swenson.

Terms: Groundwater Quality; Bitterroot River(76-H)

3/134-MHS _____. 1972. Hydrology and Effects of Conservation Structures, Willow Creek Basin, Valley County, Montana, 1954-68. Water-Supply Paper 1532-G by D.G. Frickel.

Terms: Willow Creek(40-0); Erosion Control; Sediment Control

3/135-MHS _____. 1971. Prospects for Developing Stock-Water Supplies From Wells in Northeastern Garfield County, Montana. Water-Supply Paper 1999-F by M.C. Van Lewen and N.J. King.

Terms: Garfield County; Wells; Stock Ponds

3/136-MHS _____. 1968. Geology and Ground-Water Resources of the Lower Bighorn Valley, Montana. Water-Supply Paper 1876 by L.J. Hamilton and Q.F. Paulson.

Terms: Groundwater Quality; Bighorn River(43-P)

3/137-MHS _____. 1968. Geology and Ground-Water Resources of the Deer Lodge Valley, Montana. Water-Supply Paper 1862 by R.L. Konizeski, et.al.

Terms: Groundwater Quality; Deer Lodge Valley

3/138-MHS _____. 1964. Geology and Water Resources of the Bluewater Springs Area, Carbon County, Montana. Water-Supply Paper 1779-J by E.A. Zimmerman.

Terms: Groundwater Quality; Carbon County

Entry
Number

3/139-MSL U.S. Geological Survey. 1964 to Present. Water Resources Data for Montana, Part 2, Water Quality Records.

Terms: Data Collections

Note: This is an annual publication. Prior to 1964 the data appeared as a portion of Quality of Surface Waters of the United States in the U.S.G.S. Water-Supply Papers.

3/140-MHS _____. 1960. Geology and Ground-Water Resources of the Gallatin Valley, Gallatin County, Montana. Water-Supply Paper 1482 with a section on groundwater quality by R.A. Krieger.

Terms: Groundwater Quality; Gallatin River; Gallatin County

3/141-MHS _____. 1960. Geology and Ground-Water Resources of the Lower Little Bighorn River Valley, Big Horn County, Montana. Water-Supply Paper 1487 with a section on groundwater quality by R.A. Krieger.

Terms: Groundwater Quality; Little Big Horn River; Big Horn County

3/142-MHS _____. 1958. Ground-Water Factors Affecting Drainage in the First Division, Buffalo Rapids Irrigation Project Prairie and Dawson Counties, Montana. Water-Supply Paper 1424 with a section on groundwater quality by E.R. Jochens.

Terms: Groundwater Quality; Buffalo Rapids Irrigation Project; Prairie County; Dawson County

3/143-MHS _____. 1957. Geology and Ground-Water Resources of the Lower Marias Irrigation Project Montana. Water-Supply Paper 1460-B with a section on groundwater quality by H.A. Swenson.

Terms: Lower Marias Irrigation Project; Groundwater Quality

3/144-MHS _____. 1957. Preliminary Survey of the Saline-Water Resources of the United States. Water-Supply Paper 1374 by R.A. Krieger, et.al.

Terms: Saline Water

3/145-MHS _____. 1956. Geology and Occurence of Ground Water in the Townsend Valley, Montana. Water-Supply Paper 1360-C with a section on groundwater quality by H.A. Swenson.

Terms: Groundwater Quality; Townsend Valley

Entry Number

3/146-MHS U.S. Geological Survey. 1956. Geology and Water Resources of the Lower Yellowstone River Valley, Between Glendive and Sidney, Montana. Water-Supply Paper 1355 with a section on groundwater quality by Herbert A. Swenson.

Terms: Groundwater Quality; Yellowstone River

3/147-MHS _____. 1955. Geology and Ground-Water Resources of the Missouri River Valley in Northeastern Montana. Water-Supply Paper 1263 with a section on groundwater quality by W.H. Durum.

Terms: Groundwater Quality; Missouri River

3/148-UM _____. 1952. Sedimentation and Chemical Quality of Water in the Powder River Drainage Basin, Wyoming and Montana. Circular 170 by C.H. Hembree.

Terms: Sediments; Water Chemistry; Powder River(42-J)

3/149-MHS _____. 1951--. Quality of Surface Waters for Irrigation Western States. Water-Supply Paper _____.

Terms: Data Collections

Note: This has been an annual publication containing limited data on Montana waters. The following Water-Supply Papers contain data for the following years:

Year	WS-P	Year	WS-P	Year	WS-P
1951	1264	1956	1485	1961	1886
1952	1362	1957	1524	1962	1946
1953	1380	1958	1575	1963	1952
1954	1430	1959	1699	1964	1960
1955	1465	1960	1746	1965	1967

3/150-MHS _____. 1947-1963. Quality of Surface Waters of the United States. Montana. (Parts 5 and 6 and 9-14). Water Supply Paper _____.

Terms: Data Collections

Note: After 1963 these reports are published as Water Resources Data for Montana; Part 2, Water Quality Records by U.S.G.S. Data prior to 1963 for Montana are contained in the following Water-Supply Papers: (cont. p. 54)

Entry Number

3/150-MHS (cont.)

Year	Parts 5-6	Parts 9-14	Year	Parts 5-6	Parts 9-14	Year	Parts 5-6	Parts 9-14
1947	1102	1102	1953	1291	1293	1959	1643	1645
1948	1132	1133	1954	1351	1353	1960	1743	1745
1949	1162	1163	1955	1401	1403	1961	1883	1885
1950	1187	1189	1956	1451	1453	1962	1943	1945
1951	1198	1200	1957	1521	1523			
1952	1251	1253	1958	1572	1574			

3/151-MHS U.S. Geological Survey. 1929. Geology and Ground-Water Resources of Central and Southern Rosebud County, Montana. Water-Supply Paper 600 with a section on groundwater quality by H.B. Riffenburg.

Terms: Groundwater Quality; Rosebud County

3/152-MHS _____. 1929. Ground Water in Yellowstone and Treasure Counties, Montana. Water-Supply Paper 599 by George M. Hall and C.S. Howard.

Terms: Groundwater Quality; Yellowstone County; Treasure County

3/153-MHS _____. 1925. Contributions to the Hydrology of the United States. Water-Supply Paper 560. Contains article by H.B. Riffenburg (pp. 31-52) entitled "Chemical Character of Ground Waters of the Northern Great Plains."

Terms: Groundwater Quality; Chemical Character of Ground Waters of the Northern Great Plains

3/154-MHS _____. 1917. Contributions to the Hydrology of the United States. Water-Supply Paper 400. Contains article by O.E. Meinzer (pp.9-38) entitled "Artesian Water for Irrigation in Little Bitterroot Valley, Montana."

Terms: Little Bitterroot River(76-L); Artesian Wells; Irrigation Water; Artesian Water for Irrigation in Little Bitterroot Valley, Montana

3/155-MHS _____. 1915. Contributions to the Hydrology of the United States. Water-Supply Paper 345. Contains article by O.E. Meinzer (pp.79-102) entitled "The Water Resources of Butte, Montana."

Terms: Municipal Water; Butte; The Water Resources of Butte, Montana

Note: Includes an evaluation of the chemical quality of the water.

Entry
Number

3/156-MHS U.S. Geological Survey. 1914. Water Analyses from the Laboratory of the United States Geological Survey. Water-Supply Paper 364 by F.W. Clarke.

Terms: Spring; Thermal Springs; Water Chemistry

Note: Contains chemical analysis of several Montana springs.

3/157-MHS _____. 1911. Some Stream Waters of the Western United States with Chapters on Sediment Carried by the Rio Grande and the Industrial Application of Water Analyses. Water-Supply Paper 274 by Herman Stabler.

Terms: Water Chemistry

Note: Contains water chemical data for several Montana rivers.

3/158-WQB U.S. Public Health Service. 1964. Water Resources Study and Public Health Aspects of the Jefferson and Whitehall Units; Three Forks Division, Missouri River Basin Project, Montana.

Terms: Three Forks Area; Reservoirs; Insect Control

3/159-WQB _____. 1960. Report of Yellowstone River Watershed Survey, Yellowstone National Park. By L.P. Gazda and James H. Eagen.

Terms: Yellowstone River; Yellowstone National Park; Aquatic Bacteria

3/160-WQB _____. 1960-(?). Summary Report on Quality of Interstate Waters.

Terms: Madison River(41-F); Little Missouri River(39-F); Gallatin River(41-H); Yellowstone River(42&43--); Tongue River(42-B&C); Kootenai River(76-D); Bighorn River(43-P); Powder River(42-J); Clark Fork River(43-D); Water Quality

Note: This is a series of short reports. The total number of reports are unknown but the Water Quality Bureau Office has studies for the following rivers: Madison: 1961; Little Missouri: 1962; Gallatin: 1962; Yellowstone: 1960,1961; Tongue: 1961, 1963; Kootenai: 1960; Bighorn: 1961; Powder: 1961,1964; Clarks Fork: 1964.

3/161-WQB _____. 1953. Report on the Biological Aspects of the Investigation of Pollution of the Whitefish River, Montana. By John N. Wilson.

Terms: Plankton; Water Pollution; Whitefish River(76-LJ)

Entry
Number

3/162-WQB U.S. Public Health Service. 1951. Missouri River Drainage Basin, a Cooperative State-Federal Report on Water Pollution.

Terms: Water Quality Control; Missouri River; Water Pollution

3/163-WQB U.S. Soil Conservation Service. 1968. Soil Erosion and Sedimentation on Federal Lands.

Terms: Erosion; Sediments

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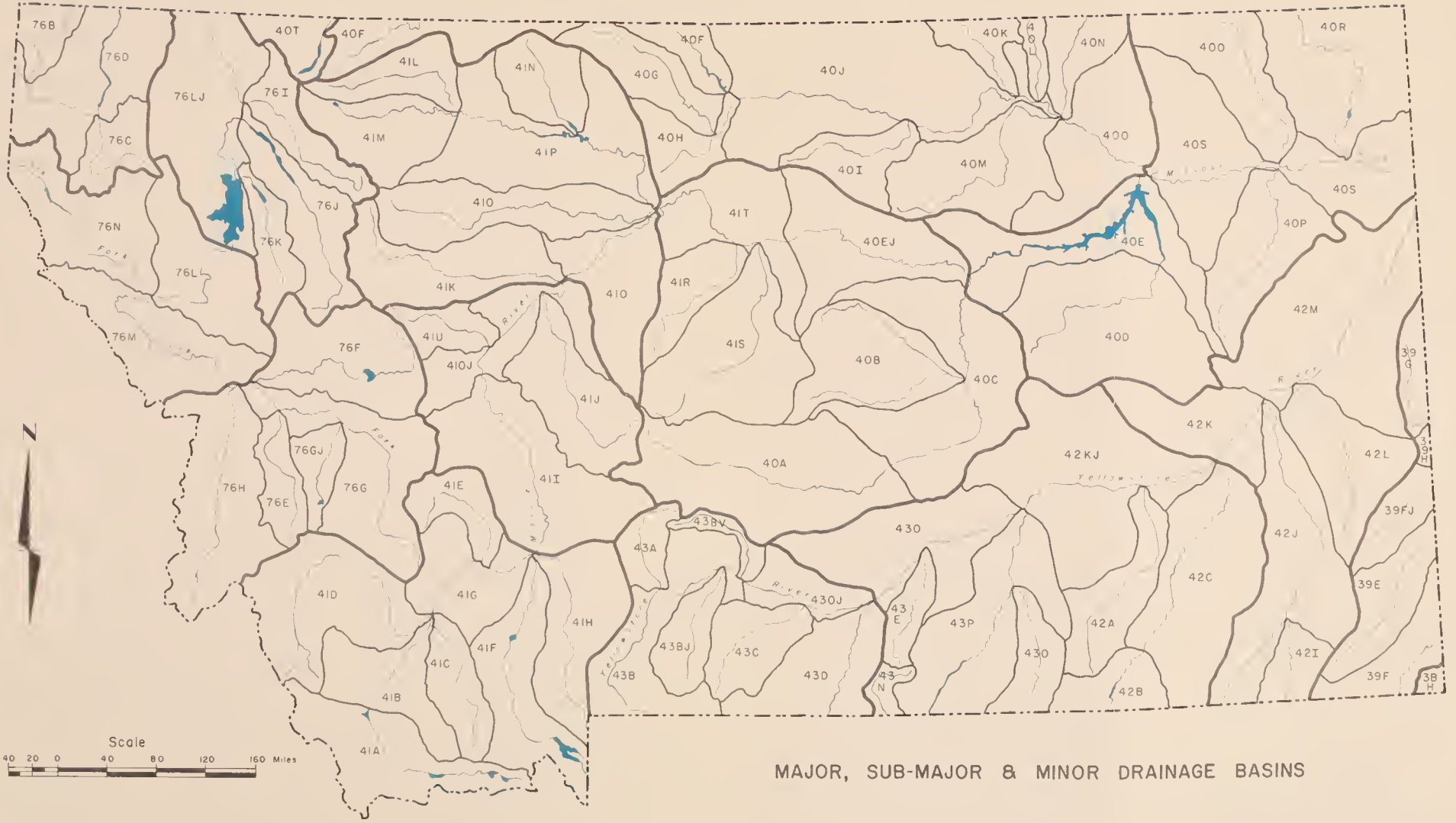
STATE OF MONTANA



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